Handling the Hog

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Handling the Hog

From Start to Finish

By "Westerner"

Butchers Advocate Co.
No. 203 Broadway
New York

TS1970
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New York, N. Y.

10-16753

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CHAPTER I.

HANDLING HOGS ON ARRIVAL AT THE YARDS—THE GUTTING—SAVING THE BUNG—FACING THE HAM—THE USE OF HOG HEADS—THE HEARTS AND TONGUES.

Every packinghouse man has read so many articles on the subject of killing, cutting and the different methods of curing hogs that it would seem superfluous to open up the matter again, but there are new men taking hold almost every week, and if the method advanced in this book tallies with their method of handling, it will give them more confidence, and consequently they will turn out better work. But, let's get down to business and see how simple the work is—so simple that, in the case of the curing, the department head should never allow a vat or tierce to go wrong in any way; that is, not to allow his pickle in the vat to get "ropy" or sour, and to be possessed of a full knowledge at all times of how his

meat is in the vat, which, in the case of hams, can be gained by his thirty-day inspection. In the same way, should a tierce go "dry" he should be aware of it, and when his tierce stock is getting old and perhaps the temperature poor, his pickle (sweet) will become thick, which later on will sour his meat. Foremen ought to look after all this, but on the department head will fall the blame of anything going wrong, and in cases such as this there is no excuse for him, but later on this particular part will be taken up more fully.

On the arrival of the hogs in the house from the "yards" they are turned over to the superintendent of the killing department, whose man will see that they are watered and that his house is not too crowded, and that he picks out any tired hogs from the lot. These and cripples should be killed at once, as it is not good policy taking chances on their getting better. Instead they very often become worse, and any little bunching of the hogs causes them to easily smother.

Driving to the shackling pens should be done as quickly as possible, though at times this is a hard matter when you are killing fast;

but, at least in the shackling pen, the shackler should not lose his temper because he misses a hog a couple of times, and to get even strikes the hog with the shackle across the head or over the back, probably spoiling it afterward. They will do it though, if not closely watched.

The work of the sticker does not call for any comment further than that his work should be clean and thorough, no excuse being taken for "shoulder-stuck" hogs, and he will also see that the "sticking bar" is kept full, so that his hogs will be done kicking long before they get to the "dropper," who otherwise should wait till they are dead.

Next in line comes the "tub," and so cramped are some houses that they have not room for a scalding tub of proper length, or else they do not attach the importance to it which it really deserves. Possibly the only person consulted in its construction was the master mechanic or boss carpenter; very good men in their way, but very poor at hog killing and its requirements.

Any scalding tub carrying 500 or more hogs per hour should be 35 to 40 feet long, though I have seen a tub 28 feet long carrying 700

per hour. This was wrong, decidedly wrong, but there was no help for it and no way out of it at the time. The result of having such a short tub with such a large carrying capacity was that the water had to be carried at 150 degrees F., and if the slightest thing went wrong the scraping machine had to be stopped; you had a lot of over-scalded, or, worse still, a lot of "burnt" hogs, which need no description. With a 40-foot tub carrying the same number per hour the water could be carried at 140 degrees F., which would give a better and clearer scald than the higher temperature.

This 40-foot tub would, to do the work properly, require five men, besides the scalder, but with the aid of a mechanical device four of these men could be dispensed with, leaving only the man "pulling out of the hole" from the dropper and the scalder on the tub.

This device is two endless chains fitted on the tub, one on each side connected by bars, on which are four fingers, which drag the hogs along in the tub and also keep the backs under the water. There is one set of these rods or fingers longer than all the rest, and they sweep within a few inches of the bottom of

the tub, so that it is impossible to have any "sinkers." The whole is driven from overhead with a chain and sprocket wheel.

The scalding tub should be so placed that it would be at right angles to the bristle bench. The reason for this is that when the hog falls off the "throw-off" he lands right in line for "hooking on." The other way, the bristle bench and tub being in line, the hog on being thrown out, lays right across the former and has to be turned straight by a man known as the "roller" before the man can "hook on."

It is an awfully hard job, and a man to fill the place is hard to get, as few men can stand the scalding hot water on the hands, even though they have a bucket of cold water to plunge their hands in. However, the scalding tub at right angles to the bristle bench is entirely the better plan.

The principal men on the bench proper are the "header" on one side with the man "hooking off" and the "string cutter" and the "hanger on" on the other side.

Right after the hogs are hung on the rail is where the head of the department has to keep his eyes open, if he would make the show-

ing required of him, and this is where the cleaning of the hog is finished. With a low temperature scald and a brush or two on the rail, with a good flow of water in the sprinklers, the hog will look clean and bright when the last shaver passes his knife over him, and there cannot be too much water up to this stage. There may be a man or two with a hand scraper on the rail, and there will also be the ham shavers, and a man who can run the entire day and give the knife the dexterous turn required on the ham without cutting the skin, is indeed a prize. All the shaving must be done without cuts, but the hams more than any part. If the skin of the hog is not properly cleaned on the killing floor it cannot be done again, as no amount of scrubbing will give it the same look that could have been secured on the killing floor.

Leaving the shavers, we come to the gutters. This work, in some houses, is done differently to what it was some years ago. Instead of a gutter standing in front of his hog to take out

the crown of the bung gut, it is "dropped" by a man standing at the back of the hog and well over the hams, so that he can see the cut he is making. To start this properly, further up the rail a man was placed who opened the aitch, then a man who opened the breast bone, and then another who started opening the belly by commencing at the top of the breast bone, which had already been opened, and, putting his hand inside, with the knife blade outside the hog and opening upward until he went into the cut made by the man opening the aitch.

The object of opening the belly in this way is that the knife does not go inside, and therefore none of the small guts are cut. It may look expensive, but when you figure that, opening a hog in the ordinary way a man will cut 30 per cent of the small guts, the other way will give you such a return that the expense is easily covered. The hog then is opened, when it goes to the man who stands at the back and "drops" the crown of the bung, and

a "snatcher" completes the gutting. I have known gutters in the old way to save 95 to 98 per cent of bung guts, and there is no reason why a better percentage should not be made in the new style, as the man can see the cut he is making, while in the old way he could not.

This method of saving the bung gut originated, or was put into practice at a time when the gutters went on strike for 50 cents per hour. They were getting 45 cents. They were refused, and this method was adopted, as it is so simple that any one who can use a knife can easily do it. Previous to this the gutters had a good deal more of their own way than was healthy for the house. They were high-priced men, and the rest of the "gang" looked up to them, but this is all changed in some of the big houses. The percentage of bungs saved was made in primes and exports, and, of course, had to be handled just as carefuliy by the "puller," the "trimmer" and the

"turner," either of whom could spoil the care given by the gutter.

All of this the department head must look after, or else he will not get the results I mention. The "puller" will "crack" the gut in pulling or in skinning it, the trimmer will "scar" it with his knife, though, strange as it may seem, the "scar" given by the gutter to a bung gut crown can be easily distinguished from that made by the trimmer. Then again the turner may crack the gut in stripping or turning it, or he may force the water so hard through it that it will become covered with blisters. All of these causes will prevent your bung from becoming a "prime" or "export," which means a lot in a day's killing of, say, six to seven thousand hogs, when you figure prime bungs at from 5½ to 7 cents and "exports" 7 to 10 cents each.

These results can be obtained and maintained if properly looked after and the department head is possessed of the necessary executive ability. If not, he is up against a "hard

bunch," as I do not know of any lot of men who will more quickly take advantage of any weakness shown by the "boss" than a large hog gang. I recall one instance where the head of a hog-killing department in one of the large houses was transferred, promoted to another department, leaving behind him as good and as orderly a lot of men as in any house in the country. It took the gang only a very short time to find out the weak spots in the new man, to such an extent that the house had to get another man in his place.

After the bung gut is pulled from the "set" of guts, they pass on to the "paunch trimmer," who takes off the caul, pluck and paunch, trimming the latter closely of fat, leaving only the large and small intestines behind, which are then passed on to the "small gut pullers," after the man cuts off the giblet meat. The small guts are pulled into barrels, the ends being left hanging outside, so that the strippers can easily handle them. A good puller with ordinary care will pull the full length of the gut, 150 to 200

feet, without breaking, unless they are wrong, when it is almost impossible to pull without breaking. It is false economy to run this gang short, or, in other words, to give them too much to do, eight hundred sets in ten hours being sufficient for a man to do.

The intestines which are left are known as the "black guts" and are cut by machine, or hashed, and washed thoroughly. After washing they will be found to average 3 3-5th lbs. to the hog and will yield in lard 1 1-5th lbs. per hog. These figures will, if tested, be found accurate, though, of course, the yield will depend largely on the manner in which it is cooked.

Next will come the ham facer and the lard puller. In facing the ham the man will make one clean cut and he will also "drop" the flank on each side. The lard puller will generally leave a small piece of lard around the "skirt," which should be removed by a man with a "scraper." Just here the "splitters" come in, the sides of the hogs being hooked together

so as to hold them open. The splitter must come down through the center of the backbone, dividing the hog evenly, showing the bone perfectly smooth on each side. Should any hogs require to be "marked," or have the backbones raised, it will be done just after they leave the gutters. The tongueing will be done and the heads cut off before they come to the splitters. The necks should be washed at this stage with a spring nozzle hose and a brush, and immediately afterward the shanks may be sawed and cracked, as it helps to chill the ham.

Hog heads are generally used for the canning room and are shaved by piece work. The shaving of these heads intended for brawn must not be confounded with the shaving of market heads. In the former the jowls are removed —in fact, everything is cut away except the cheek meat and the snout, the lower jaw being pulled so that there will be less chance of loose teeth being mixed up among the meat in cooking, as they are prone to fall out. When the heads are tanked for lard they should be

made equally as clean as when used for brawn, and should be "cheeked" and also the "poll meat" taken off. The latter is a piece of meat on the back of the head, where it is connected with the cervical vertebrae; the head is then split and washed and will yield around 55 per cent in lard.

The paunches or stomachs are entirely cleared of fat that was left by the paunch trimmer, and then turned and washed and the inner lining skinned off, which is sent to the pepsin factory. The pancreas or sweetbread is also pulled and trimmed of fat and also sent to the pepsin factory. Plucks are trimmed and livers and hearts sent to the coolers after they have been washed, though the former should not be allowed to soak in water; in fact, the less water they come in contact with, the better for them, and they should be in such a shape coming from the paunch trimmer that they merely require a dip and a rub with the hand in clean water. The hearts ought to be well washed and purged of the clotted blood by pressure of the hands. Tongues should be

thrown into cold water and washed with a brush to remove slime, trimmed and then thrown into ice water, from where they are taken to the cellar, as they make a truck load, and hung up singly on racks in a temperature of 39 or 40 degrees F. Bladders are trimmed and thrown into cold water and are generally sold under contract at 25 to 30 cents per 100—not very much, but on, say, a 6,000 kill it will mean $15 to $18, with only an expenditure of $1.75 for the trimmer to be deducted. In cheeking heads, great care must be taken of the cheek meat, as if piled too long in a barrel into which it is thrown it will sour very quickly. Some of the smaller houses do not pay attention to this, and do not seem to mind that heavy smell which is characteristic of hot trimmings piled together, especially cheek meat, and which is the first stage of sourness, as also of putrefaction if allowed to continue. Some comfort themselves with the idea that it is all right if they use a lump of ice in the barrel or throw the cheeks into ice water. This is

wrong, entirely wrong, as in either case there is water which draws the extract out of the meat. The only remedy for this case is frequent deliveries to the chill room with the meat, where it should be spread out on racks for the purpose.

CHAPTER II.

THE HANGING FLOOR—IMPORTANCE OF PERFECT VENTILATION — DIFFERENCE BETWEEN "HARD" AND "FIRM" HOGS—PROPER CHILLING AS PREVENTATIVE OF SOUR.

After the hogs leave the killing floor their first resting place is the hanging floor, and here is where the initial step is taken in curing, unless the temperature is very low; in fact, under certain climatic conditions, if the hanging floor was large enough to accommodate the whole kill so as to leave them there till all the animal heat had passed away, there would be no sour hams, but unfortunately in the eastern and middle States those conditions are not always such that you can leave the hogs out on the hanging floor all night, as can be done in the western and coast States. The nights are

too warm, or, mayhap, too damp, in either case souring the meat; or, again, the temperature may fall to zero, making your hogs as hard as rocks, so that, after a couple of hours, the hogs are run into the chill room. If there is a good ventilation in this chill room and all the steam arising from the hogs is allowed to pass away, you are safe enough; but if there is poor ventilation or the ventilators are closed, allowing the steam to condense on the ceiling and then fall back on the "shanks" and hams, you are going to have "sour marrows." The theorists who make the assertion, "Oh, that's all right; the refrigeration will take up all the steam," never stayed in a hog chill room when it was filling with newly killed hogs, or in the pipe room and observed the action of the steam and its condensation. The refrigeration can do nothing of the kind, as by the time it would get in shape to do so the steam would have condensed and fallen back on the hogs in the form of water. Keep the ventilators open and allow the steam which will arise to pass out, and your room to

become perfectly clear; then shut your ventilators, and the chances are that your hams will be sweet when cured.

A great source of trouble, though it does not seem to be realized, in connection with hog chill rooms is that they are kept too cold. Hogs when ready to cut do not require to be hard; they should be firm, and if only firm after 48 hours in the chill room, they will have received a better chilling than if they came out hard to the cutting floor, from the fact that in the latter case, through the intense cold, the outside of the meat—hams especially—was solidified to such an extent that the animal heat was completely sealed up, and while, of course, it was chilling, it took a longer time for the heat to pass away than if a higher temperature was used.

In writing of hogs being firm, as against hogs being hard, the former expression must not be construed in such a manner as to leave the inference that soft and sloppy hogs are meant. I have seen hogs hanging out all night in a temperature of 45° F. and next day shoved into

a chill room in a temperature of 34° F., in which they were held for 24 hours, which, with the time they were on the hanging floor, made 36 hours for some of them (the latter part of the kill) and then cut, and there was no trace of heat in the hams. On the other hand, I have seen hogs hanging two hours on a hanging floor and then put into a temperature of 28° to 30° F. after the room had steadied down and kept there 40 to 46 hours. The hogs were then cut and the hams and shoulders and "calas" hung in a hanging room which was at 32° F., and after hanging there 36 hours the temperature of the 20 to 24 hams was 2° to 3° F. higher than the temperature of the room, all due to the heavy cold in the chill room, which sealed up any outlet for the heat to work out quickly.

While the packing industry has flourished and we have got hams and bacon cured so mildly that the taste of salt is almost imperceptible, we cannot but admit that on the farm there have been cured some good hams and bacon also, and if not so mild as the fancy goods of the pack-

ing house of to-day, still they were more free of "sour shanks" and "sour bodies" in their hams than in the most up-to-date curing department, simply because their hog was chilled properly, or, at least, all trace of animal heat had passed away quickly before the hog was cut up to go into cure, and in what time? The farmer did not, nor does not, wait 48 to 72 hours for his hog to chill unless he is occupied with something else and cannot get around to it. If he has nothing else that requires his attention, that hog will be in pickle 24 hours after killing—in pickle "strong enough to float a potato," and will come out "sweet." This strength pickle would, I should judge, be a saturated solution. There is no great credit due to this man for this, for he really knows very little if anything about the passing away of animal heat, or what effect it would have on his meat had it remained there till he "packed" it down in pickle. He has not experimented on the matter; he simply does what he saw his father doing, or his neighbor's father, and he comes out right every time, while

in the great packing houses, where enormous sums are yearly spent in experiments, the best they have arrived at in preparing a hog to go into pickle is to put it into a prepared room, and as quickly as possible get that room down as cold as they can—so cold that it seals up every vent by which the inside heat could make its way out, with the result that there are a good many "sour bodies" and a great many "shank sours," from which the department head tries to wriggle out, on presenting his 30-day inspection sheet, by giving as an excuse that there were "fresh hogs" killed in that "packing."

He doesn't seem to know the real reason, and is willing to put up the "fresh hog" bugaboo. Some of the uninitiated may wonder what "fresh hogs" are. They are hogs just driven from the "yards" and killed right away without resting, and supposed by many to be in such a feverish condition that the meat would not come out of cure "sweet." Chill those hogs properly after killing and leave no trace of animal heat in them

before putting into pickle, and they will come out sweet as any other.

When I make the statement that on the farm they have no sour hams, I do so reservedly, as there may be individual cases where the man neglects the meat; but in general, the farmer has no sour meat in what he kills and cures, and it is principally due to the natural chilling in the open air that he has not.

Some of my readers who have not the subject well in hand may say perhaps it is the pickle which he uses that brings such good results, from its strength. Not so, as a weaker or lighter pickle will enter the meat quicker than the strong pickle, caused by the density of the latter. The entire freedom from sourness of the hams and bacon cured on the farm is due to the manner in which the hog is chilled after killing—chilled so that the animal heat from the inside passes away as quickly as the outer part cools, until all the heat expends itself, and all this takes place in a pure air in circulation.

This method could not be adopted in the pack-

ing house, owing to the large number killed; but the chill rooms could be managed differently when the hogs are put in "hot." The room could, with a little attention on the part of the chill-room man, be kept free from the rising steam, and afterwards there could be a circulation of air with a much higher temperature, which would give much better results, whether the system be "brine pipes," "direct expansion" or any other form of refrigeration. A circulation of air in the chill room would cause a greater shrinkage in the hog, but this would not matter much, as the greater part of the cutting is going into pickle, where it will gain in weight. With this we will give the hogs an opportunity to chill and get ready to be cut up after 48 to 72 hours in the rooms, unless the house was very short on loins, when, to fill orders, they will cut hogs at 24 hours.

CHAPTER III.

THE HOG CUTTING FLOOR—DESCRIPTION OF DIFFERENT CUTS—HOW NEW YORK, BOSTON AND OTHER SHOULDERS ARE MADE—THE VARIOUS MIDDLES.

The hog cutting floor is a very long subject, if gone into properly, as there are a "thousand and one" different "cuts," but though it is so necessary an adjunct and so long established, there are very few in a packing house who are familiar with those cuts outside of hams, shoulders and loins, except those men who work or have worked there and others whose part in the affairs of the house bring them in direct communication with it; so I will, for the benefit of readers who are not "sure of their footing" in this particular line, explain some of it.

The principal man on the bench or table is the chopper, and on his ability and aptitude for work depends the speed at which the "cutting" is done. His duty, as the side falls on the bench from the rail, is to chop off the ham and shoulder and the feet from these, when the ham, shoulder and side are passed along the bench for further manipulation. For domestic use the short-cut ham is nearly always made unless on some special order. In making it, the chopper, when chopping off the foot, did so a little above the joint, so that the marrow was exposed; the ham was faced full on the killing floor, nicely rounded at the butt, which should be in length from the aitch bone, three fingers in width; the flank should be left full, so that there will be room for shrinking in "smoke." If the flank is trimmed close on the cutting floor, the result is that, when it comes out of "smoke," the skin on this part will have shrunk away toward the back of the ham, and the house, in addition to this unsightly appearance, will have lost from one pound to one and a half pounds of meat,

which should have been left on the flank, but went into trimmings and lard.

The shoulder may be made into a cala, picnic, a Boston shoulder, a New York shoulder, a square or three-rib shoulder or a regular shoulder.

The New York shoulder usually, when made, averages 10 to 12 pounds, and are made from smooth-skinned, clean hogs, the shank cut off a little above the knee joint, not so wide as the regular shoulder. The cala or picnic shoulders are made from heavier hogs, as also is the Boston shoulder, to which it bears a resemblance except that the latter is a lighter cut, and cut nearly square at the butt insead of being nicely rounded like the picnic shoulder. The lean piece of meat which is trimmed from the butt of these shoulders is known as cala butts, Boston butts, sausage meat, etc.

The square shoulder is also clear and smooth, averages 12 to 16 pounds; they are cut three ribs wide, with the shank cut off close above the knee joint, square butt.

The regular shoulder may be made from a rougher hog, and will run from 14 to 20 pounds —a little wider than the New York, with a square butt and the shank at the knee joint.

New York shoulders are also skinned—that is, the skin is taken off as far as the shank and the excess fat removed. The fat is removed from the butt of the shoulder till only a thin shaving remains, while there is very little taken off further up.

Hams are skinned in the same way—that is, the heavier averages. The ham is laid on a block for the purpose, skin uppermost, shank towards the man who is skinning, and with a semi-circular knife, known as a "draw knife," he starts at the butt of the ham, taking all or nearly all the fat there, but as he cuts through with a sawing motion he raises his hand so that very little fat is taken off the back; he continues the skinning close to the shank, when the ham presents a nicely rounded appearance, having lost about 14 per cent. of fat and skin.

Sometimes there is a demand for light skinned hams, say 16 pounds, but generally skinned hams are made from 18 to 20 pounds average and up, all averages, of course, being kept separate from the time the hams are assorted at the green meat chutes, passing through the various stages till they are shipped in sweet pickle or "smoked." The heaviest regular hams, unless in something special, are 18 to 20 pounds average.

The side which has been taken away after the ham and shoulder was chopped off may be converted into several different cuts. Just as it stands it would be what is known as a "short rib" or "short rib middle," "rough rib" if the backbone is left in and "regular short rib" if it is removed. Take the ribs out and free it entirely of bone, and it is a "short clear"; remove the loin and it is then an "extra short clear." It will also make either a rib or clear back, a regular or clear loin, fat back, belly, rib or clear. There is another cut which is similar to the short rib; that is the "English short rib," only

that it is cut shorter and is trimmed square, while the "regular short rib" is not, unless under some special agreement of the purchaser or wish of the house. The "English short rib" is an export cut, and calls for good, clean-looking hogs; it is made by cutting a square shoulder and a long cut ham off the side. There are also "long rib" and "long clears"; they consist of the shoulder and side, and in the case of the "long rib" the backbone, blade and knuckle bones are removed, as also the shoulder and neck bones, with, of course, the ribs left in; the leg is cut off close and it is trimmed square at each end. The "long clear" is made in the same way, and, as the name implies, is cleared of bone and rib; "extra long clears" are made the same as the last named, only in addition the loin is taken out.

The "Cumberland" or "Cumberland middles" are much the same as "long rib middles," both being export cut, except the Cumberland is heavier and the leg, instead of being cut off close to the side, is cut off at the knee joint.

The Yorkshire middle is like the long clear, except that the leg is sawed off half-way between the knee joint and the side, and that it is of a lighter average—40 pounds—while the "long clear" is about 40 to 60 pounds. The "Wiltshire" or Wiltshire side is also an export cut, and is the whole side of the hog with the legs, both of shoulder and ham, cut off at the joint; neck bones, shoulder ribs and backbone taken out; trimmed square across at the shoulder.

There are numerous other cuts, but not in general use, and unless on an order from abroad, as they are nearly all exported, are rarely made. Some of the cuts described are not in the demand that they were formerly for export.

Mess pork is made from the sides of rough hogs, leaving the ham off, and are chopped crosswise. Prime mess is also the whole side with the ham off and is chopped lengthwise and again chopped crosswise into five or six pieces.

CHAPTER IV.

HANDLING OF MEAT AND ITS PREPARATION FOR CURE—HOW TO AVOID NO. 2 HAMS—ALL HAMS WILL CURE ALIKE IF PROPERLY TREATED AT EVERY STAGE.

The hams, when chopped off, or, in some cases, sawed off, are dropped from the trimming table on the cutting floor by means of chutes that are known as the "green meat chutes"; in close proximity to these chutes is the "green meat" inspector, who handles every ham and inspects it, and then throws it into the box to which it belongs. He picks out the smoothest and cleanest looking of these for his fancy grade, keeping, of course, the different averages separate. The next grade will be his No. 1 or regular hams. He will pick out those which are especially rough or

"staggy" and put them with the hams which are to be skinned, no matter what the average may be of the rough ham. The skin bruised hams should also be put with the hams to be skinned. His "cushion" and "loin-bruised" hams are turned over to the sausage room. In this way there will not be any No. 2 hams put into cure as there would be if not treated in this way, and No. 2 hams are anything but a profitable investment and will not be tolerated by any superintendent who understands the business.

The green meat inspector will go through those hams so rapidly, catching every one and turning them all around, scrutinizing them closely, that an onlooker, unacquainted with the work, would not believe that he was giving a close inspection. I can especially mention the case of two men who did this work, and the instances when a ham fit for the fancy grade would be found among the regular hams after their inspection and grading were very rare, and either of these men could handle the hams from the cutting of 6,000 to 6,500 hogs per day. This part

of the work would, in a large house, if properly classified, belong to the sweet pickle department.

The hams, as they are graded and averaged, are taken to the scale and from there into the hanging room, where they are hung up for further chilling, though under certain conditions there is no reason why those hams should not be put into cure immediately after being "scaled," but more of this later on.

The hams are allowed to remain in this hanging room, hung on "trees" (than which no better form of chilling can possibly be had for "cuts"), from 24 to 72 hours, dependent on the state of the hogs when cut and the average of the hams. This seems an awfully long time to waste, as previous to this the hogs (before being cut) were hanging in a chill room for 48 hours.

Some houses may differ a little from this, but in the main this is correct where they do not "pack" from the "chutes," which from the ordinary method of refrigeration can only be done under certain climatic conditions, though there is no reason that can be put forward why it

should not be done in all cases if the refrigeration is handled differently. I know of one instance where the plan of "packing" from the chutes was adopted and the result was that nearly half of the hams came out of "cure" sour, so the experiment was tried no further. There was no success in this particular case, simply because no change was made in the mode of chilling. I have known other houses to "pack" from the "chutes," and they may be doing so still with good results; but climatic conditions are different there to what they were in the house that made the failure of it.

The reader will remember the incident of the farmer killing and curing his hogs described in Chapter II; no refrigeration was used in his case, only a chilling by natural means, so as to allow the animal heat to pass away. Still, his meat was "sweet." Then why all this refrigeration over a period of 72 to 120 hours? Why all the extra expense of rehandling from "green meat chutes" to hanging room and from there again to "cure," instead of taking the meat direct

to "cure" from the "chutes"? This lengthy refrigeration may be necessary from its intensity, and on this account it does the work required of it slower than if it were not so intense. It does not tend to make the ham any more juicy or tender; hanging in the outside air where possible to have it so, or hanging in mild refrigeration, would have a tendency to effect this object, as the formation of sarco lactic acid which produces that state would be unimpeded, while in a chill room under intense cold its action is arrested, so there is nothing to be gained in this line by heavy refrigeration.

To attempt to describe how this great waste of time and expense could be corrected, as also the number of sour hams, would be presumptuous, and as an ascertained fact could only be carried out by tests and experiments, and, while this would occupy time, it would be absolutely necessary for a true solution.

With the Federal meat inspection which is in force now, the percentage of sour hams should

be reduced to a minimum. Is it so? There is an ante-mortem examination held and then a post-mortem; then the hogs are subject to a reinspection. The first two inspections are made by veterinarians and the reinspection by meat inspectors; both classes of men are experts in their line, and anything diseased and which will not make sweet meat out of "cure" is thrown out and condemned. Under the existing laws of nature, and if no disease is discernible in the ante or post-mortem inspections, all the organs perfectly healthy, glands showing that they were performing their work properly while life existed, all hams should cure alike if properly treated; then why all those "sour bodies" that are found in certain places? The percentage compared to the kill is small, but not at all exceptional or rare. This is a chapter on the handling of meat and its preparation for "cure," still it cannot be amiss to devote a line or two to the men who are doing their utmost to make this perfect.

The veterinarians who made the ante and post mortem inspections are experts and pass

their time day after day in these examinations, and cannot fail to detect the slightest weakness or sign of disease. The meat inspector is also an expert, his knowledge gained by long experience in the handling and curing of meats, etc., this knowledge causing him to be disliked very often by those with whom his work brings him in contact, principally by the man in charge of the department, as just as soon as he commences to do his work in a careless manner or in such a way that the meat is liable to suffer, the meat inspector "jerks" him up, which he thinks is detracting from his dignity. I am acquainted with both classes, and know whereof I write; but, really, to the owner of the house the meat inspector is better than an extra foreman in a department.

The calas or picnics will be treated much the same as the hams, but there is no need to have a green meat inspector on them at the "chutes," the averaging being done by the truckers. They are not so susceptible to damage, while the hog is alive, as the ham is, and are not so important,

but the averaging should be done properly, and the trucker is easily educated to such work if there is a good foreman keeping his eye on the hanging of the meat. Going from the "chutes" to the hanging room, the trucker goes to the scale with his load, and calls out the description, the number of pieces and the tare of his truck. In this way, if he is not within the average, the scales will not give him a ticket, as should be done, if he is within any average, whether it be 3 to 5, 4 to 6, 5 to 7, 6 to 8, 8 to 10, etc., so he has to unload again and make a recount of his pieces, or throw out some that do not belong to the average he is trying to make; about once is enough of this and afterwards he will be all right. Of course, old hands will be hired for this work, or men taken from other parts of the department who show an aptitude for it.

CHAPTER V.

Trimming the Bellies—Use of the Pounder in Making Bacon—How Beef Tongues Should be Taken Out for Smoking—Boning and Tying Green Hams.

The bellies, after being cut from the side, may be trimmed right there, on the cutting floor; that is, the lighter ones intended to go into pickle, or they may be sent down "chutes," where they are picked out for grade and average by the men from the sweet pickle department, who take them to the trimmers. The first step taken is to put them through the "belly pounder," which flattens them out and leaves them in better form for trimming. This "pounder" is a very important accessory and the belly is better trimmed and

comes out of pickle looking ever so much better from the use of it, the meat looking firm and solid, and there are few houses without one now, whether driven by electric motor, compressed air, or steam. The amount of trimming taken off, and the style, will depend on the wishes of the house; no set rule can apply. The bellies being strung and skewered in the shoulder end (this is not the case in some western houses), should have the flank a little longer when the belly is trimmed, as, in "smoke," this side will shrink more than the back, so that when it comes out, the meat will be square if the cut on the flank end was made slightly on the "bias" instead of being square across. Houses that pride themselves on their bellies will cut inside the teats in trimming and will make them "seedless," as few sales of bellies are made that the contract does not call for "seedless."

The finest grade of breakfast bacon which each house puts up in a very mild cure, should be run through the "pounder" after being

cured and then retrimmed and "faced," the facing giving the lean a brighter appearance, of course, and a very inviting look on coming out of "smoke." This grade is picked out for the smoothness of its skin, the preference being given to barrow bellies. The reason of this is, the barrow shows a streak of lean meat through the length of the belly, through the fat, and gives it the appearance of being better mixed. This streak is really a muscle, known as rectus abdominis, and in life its action is to support and compress the abdominal viscera and assist in respiration; it is also the chief flexor of the spinal column. While some judges pretend to be able to tell whether a well-trimmed belly be from a sow or barrow, by its general appearance, without seeing this streak of lean, or muscle, they are at fault very often, but if this streak shows itself ever so little you may safely conclude it is a barrow; if it does not show, it is a sow belly.

The ordinary breakfast bacon is cured in a stronger pickle and runs all averages up to

16 to 18 pounds generally; a 16 to 18-pound plain pickle belly is also carried, and anything above this average in the pickling department is in plain pickle.

Tongues, both beef and pork, which were chilled in cold water, trimmed and washed with a brush, free of all slime, were brought into the pickling department and hung up on racks, singly, to finish chilling, in 24 hours in a temperature of 39 degrees F. I have found the best results from this temperature to 40 degrees F., and tongues, either beef or pork, treated in this manner will be always sweet, and a sour tongue unknown. Lambs' tongues should be sent to—probably the sausage department is the most suitable—to be skinned by scalding, when they are turned over to the pickling department and hung, as are the others, on racks. Pork, lamb and beef tongues intended for the canning room after curing, may be hung by the end or tip of the tongue, but beef tongues intended for "smoke" should not.

The tongue for this purpose should be taken out differently on the killing floor, in this way: In sticking, it is well to stick your bullock high, as, in doing so, you avoid cutting the "fell," which covers the intermaxillary space; also, in skinning, the "header" must be careful not to destroy this "fell"; he must cut the trachea between the second and third ring, or at the third. In taking the tongue out of the head, the tonguer must hug closely with his knife the inferior maxilla (lower jaw bones), so as not to injure the mucous membrane and "fell," which surrounds the lingual muscles. This will make a nice clean tongue when washed and chilled, as there will be no abrasions to collect blood clots. When chilled before going into pickle, it is trimmed square, leaving as much fat on as possible. In hanging on the rack, unlike the canning tongue, it should be hung by the fraenum, or that part known as the "string of the tongue," with the tip also caught on the hook to prevent it hanging over; in this way it will not stretch out of shape.

On the upper part of the tongue just before the raise, where the organs of taste are situated, very frequently is found an abrasion, or, on feeling with the fingers, a small lump is felt in the flesh. Nearly half of these abrasions, or lumps, are affected with a ray fungi, which produces actinomycosis, the balance being caused by foxtail grass or other coarse forage, which works down into the organs of taste. Those abrasions should be cut away and any hard flesh or foreign matter also cut out. In the case of a tongue intended for "smoke" this cutting would spoil it for that purpose, but in the canning tongue the disfigurement does not matter.

Boned and tied hams also belong to the pickling department, and should be made there. This style of ham is in good demand and is made from the 20-pound and up green ham, though in a great many houses (especially of the smaller class) it is made from cured stock. The only reason that I can assign for it is, that in the curing of the ham boned and tied from

green stock, a miserable failure has been made in more instances than one. There can be no other reason, as I have seen repeated tests made of hams boned and tied from green stock and then cured, and of hams cured and then boned and tied, the results in every instance being in favor of the former, and there is no comparison in the appearance of the two hams when cut.

In boning and tying hams green, too much care and cleanliness cannot be exercised. There is nothing that I know of that will take up smell or taint quicker than fresh meat, and where the hand comes in close contact with the inside of the ham, or the handle of chisel or gouge in chasing the shank bone, it is imperative that both hands and tools be scrupulously clear of taint or dirt. After the ham is entirely freed of bone, it is rolled into shape and tied temporarily to hold it so, when the permanent tying is put on.

There is no established number of turns of this tying, so that the house will regulate this,

but there must be turns enough to bring the ham into a nice round shape and make it solid; the twine used is a hard whip cord, and will stand a good strain.

Now with all the care imaginable, those who gave up the boning and tying of green hams, in favor of boning and tying cured stock, made a "slop" right here, and never found out why, nor the remedy for it, or else they would gladly return to the former method, as it is a better looking article, cuts more solidly, and there is less shrink in cooking and smoking than in the ham cured and then boned and tied. This subject is more fully treated in the following chapter.

CHAPTER VI.

Observance of Details Decreases Percentage of Sour Meats—The Best Vats, and Something About Cleaning Them—"Pumping" on the First "Overhauling."

No matter how careful the man had been, he had to put his hand inside the ham and rub it to the fresh meat; then, in tying up, he could not help tying up small pockets of air, the ham being tied so hard that there was no escape for it, with the result that when the ham was cured, it was sour, sometimes only in one spot not as big as a half dollar, and again in several spots of this dimension, but never one continuous patch, as in a sour-bodied regular ham. I am aware that there are men who will tell you that the best boned and tied

ham is made from the regular cured ham; after boning, rolled in a cloth, then put into an iron container, which shapes it, then pressed hard with a lever, cooked while in this container, taken out next day and smoked or tied and smoked; those people will say that they tried the green hams, but found the other the most advantageous. The real fact of it is, they tried the boned and tied green hams and found they had so much "sour" that they abandoned it. It can be gotten out perfectly sweet without the use of any of the prohibited "dope," if handled properly.

The hams under the present system of refrigeration having hung long enough in the hanging room to have lost all their animal heat, say, 24 hours for the 8 to 10s, 10 to 12s, 12 to 14s, 48 hours for 14 to 16s, 16 to 18s, 72 hours for 18 to 20s, and so on—but no rule can be laid down for this, as the length of time required in the hanging room and the temperature there will depend on the condition of the meat coming from the cutting floor, and expe-

rience alone can settle this, as also the use of the meat thermometer, an article that some foremen disdain to use, as they think that they are possessed of an amount of knowledge that throws the merits of this thermometer in the shade. A man who is foreman in any part of a pickling department in a house holding twenty-five to fifty million pounds of meat in cure all the time, must be possessed of a good deal of knowledge in this line, but I have yet to meet the man whose knowledge was as accurate as to the temperature of the inside of the ham as a thermometer which one can stick into it. It is to get rid of the high temperature that meat is hung in the hanging room, and the thermometer is made to ascertain that temperature accurately; then why not use it? If details of this kind were more faithfully observed, there would be less sour meat.

Having ascertained that your meat is ready for packing, by any means you please, it is taken in trucks to your curing room, perhaps by a conveyor in some instances, but never put

in pickle before it is "scaled," but a change has taken place in it since, a further shrinkage, so get a new line on it, and by weighing it, you also get a uniform weight in your vats.

The time is opportune for something about vats. I have seen them run in capacity from 1,000 to nearly 3,000 pounds, but, of all, the most convenient and suitable size is the oak vat, of "buck" staves, with a capacity of 1,400 pounds. It is easily handled and cleaned, and the meat can be easily reached from any side by the "overhauler." The larger size I mentioned is too big and clumsy, so big that in some houses they find it too unwieldy to take out of the curing room to wash it when it is required to "pack," and resort to the filthy and damnable method of putting a man inside of it to clean (?) it. The number of men in a packing house, especially in dry salt cellars and S. P. departments, who do not chew tobacco, are in a very small minority, nor does the foreman go chasing around to find a man who does not "chew" to put into one of those big vats

to clean it out. Vats cannot be too cleanly washed with scalding hot water and soda and thoroughly rinsed with clean water. This cannot be accomplished in the curing room. In large houses, where the smaller vat is used, its cleaning is done by a machine outside the curing room, even outside of the building in some cases.

Were I sanctified enough to be a preacher, and one of the chosen, I might make this the subject for a sermon, giving as my text, "By their works you shall know them," but I am not; still, I cannot help reflecting that when I see a packing-house man in any position, high or low, whether he is directing the affairs of the house, or of a department, or at the "hot" end of a truck, with filthy or uncleanly habits in his work, I am positively assured that I am up against a very poor man as far as ability and knowledge is concerned, and, as an employer, such a man could not work for me in the handling of meats. There is an old adage, the origin of which I do not know, "Where there's muck, there's luck," and certainly a great number of packinghouse

men seem to place implicit belief in it, and in so doing have brought opprobrium on an industry that can be carried out as cleanly as any line of business in comparison. Well, perhaps "there'll come a day!" and in the meantime I have demonstrated that the ungainly nearly three thousand-pound vat is not conducive to sanitation, consequently, not to the sweetness of meat.

In direct opposition to the foregoing some men are so very clean, that directly a vat is emptied of the meat, they take it out and have it washed, although, perhaps, they may not require it for fresh "packing" for a week or more. This is also wrong, as in the washing you extract all of the salt, and after a few days, in the damp atmosphere of the curing room, the vat gets moldy, and it requires to be washed again, or, if you allow it to pass unheeded you are sowing the seeds of "ropy" or sour pickle. Molds are of vegetable origin, and by the average packing-house man are considered of little importance, but he would be more cautious if he understood the deleterious effect they have, depending on the

genus to which they belong, on pickles, meat and food of all kinds intended for human consumption. In concluding this paragraph, I may add that vats in the curing room, empty of meat with old pickie in them, are no sign of uncleanliness, or of being unsanitary. A vat should not be washed until it is required for "packing."

But, to get back to the "packing" of our hams. They are, say, trucked to the curing vat where the packers are, generally two men; the vat being placed in position, one of the packers will throw a handful or two of fine salt on the bottom of the vat, to keep the ham from sticking, and commence to lay his first tier of hams, backs down, butts to the side of the vat, flanks overlapping the cushion of the preceding ham, and then fill in the center; then a slight sprinkling of fine salt, and another tier, and so on until he comes to the top or last tier, which is turned face down, the last ham having attached to it a tag which will contain a slight history of the contents of the vat, such as style of hams, the average number of pieces, date of "packing," dates of "over-

hauling," when they are made; the vats, of course, "packed" at a uniform weight. There are, then, or later in the day, "headings" put on, which are four pieces of board laid across the meat and then a cross piece laid over these. On the vat are two iron "lugs," whose purpose is to keep down the cross piece, which is laid across the "headings." Before the pickle is put on, these cross pieces are probably three inches below the "lugs," but when the pickle is put on, which is done by a hose, it raises the meat, bringing the cross piece right up to the "lug," which holds it in place. The raising of the meat by the pickle removes the pressure from the underneath tiers of hams, allowing the pickle free access to them.

The reader who is closely following me will, perhaps, say I have made a "slip" here, as I have made no mention of "pumping" the hams. Not so! I've made no "slip" at all; my intention was not to pump them, at least not just yet. I got over that long ago, and it was only after numerous tests and very grave judgment that I

abandoned the method of "pumping" going into pickle, for that of "pumping" on the first "overhauling."

I do not think that any intelligent head of a department will learn very much new here. He may peruse it through curiosity to see if it coincides with his ideas, and is willing to give my opinion a trial if it does not, as there may be a possibility that he may pick up something that may be of benefit to him. There is another class who could pick up something new to them, but they won't, as some of their pet theories may be upset; their name is spelled d—u—b. There is still another class who will read this, and they are the uninitiated, who read the ads. about sugar-cured hams, but are not very sure of the process or method of curing; for their benefit I will explain two technical terms, "pumping" and "overhauling."

CHAPTER VII.

PUTTING MEATS INTO CURE—KEEPING "TABS" ON THE WORKMEN IN THE VARIOUS DEPARTMENTS—ARRANGEMENT OF VATS.

Pumping a ham consists of injecting a strong pickle made of salt and saltpeter into the ham along the line of the bone, by means of a force pump, to which a rubber hose is attached with a hollow needle on the end of it; in the hollow top of this needle are a number of holes through which the pickle is forced while it is inside the ham.

This "pumping" pickle is known as a full strength pickle, and is a saturated solution of salt, that is, the water has taken up all the salt it will dissolve. This on the salometer, an instrument used for testing the density of saline

strength of meat pickles, will show a reading of 100 and the solution will contain 25 per cent. of salt. It is a fact, perhaps, not generally known by men using a salometer, that the fourth of the reading is the percentage of salt contained in the pickle or solution.

Great care should be exercised in putting a new salometer into use, and it should not be accepted as being correct, without testing it. In fact, it is much the better plan to leave the testing of it in the hands of the house chemist, who will test it under all conditions. I have found them to vary from 1 to 3 degrees. Those showing anything over one degree variation should be returned.

To a vat of this full strength pickle, 250 gallons, is added thirty pounds of saltpeter dissolved in hot water, or pickle. This is then a very strong pickle and one would naturally think it was too strong to be used in connection with the curing of a ham; but, when you reflect that there is 70 per cent. moisture in a ham, and that this pickle will become diluted

by the natural juices, it is not at all too strong, as when the dilution takes place, it will not leave it as strong as the curing pickle (around 80 degrees) which is put in it afterwards. There is no embalming fluid or "dope" of any kind, other than this, contrary to the opinion of some.

By the term "overhauling" is meant the changing of the meat from the vat it is in to an empty one, and when all the meat is in the new vat, the pickle is baled out of the old one and put on again in the new one. This is done for the purpose of changing the position of the meat so that the pickle will get access to every part and also the agitation caused by the transaction hastens the cure as it causes the pickle to enter more freely than if laying still. In the curing of hams this "overhauling" takes place four different times, the first time in four days after the hams are packed, or put into cure, and each of the others at intervals of ten days apart.

In "packing" (putting into cure) hams the style in vogue (of "pumping" as they were taken

off the scale and put on a truck or carriage to the vat) did not satisfy me, nor give the results that should be obtained in a well-regulated house. so several tests were made before a change was decided on, with the result that "pumping" on the first "overhauling" was found the most conducive to the safety and sweetness of the hams.

Some men may think that my stuff should come out right anyhow, if I took proper care of it. I did take care of it and it did not come out to satisfy me, though it was no worse than it ever was before. I never used borax, boracic acid, salicylic acid, glycerin, etc., either in pumping or curing pickles. I wanted the hams to come out clear, using only salt, saltpeter and sugar, and I succeeded because I adopted the method of "pumping" on the first "overhauling." Do not for a moment think that I want to claim this was original. It was used before, but I had a very large establishment and had, of course, to be cautious and give the matter large consideration before making any change.

This is no guesswork, it is a sure thing. If your hams are soft and sloppy, coming from your hanging room, they are not in a fit state to receive the "pumping." The thing to do is to put them into a vat in a room of 37 degrees and put 35 degrees curing pickle on them, which is the best curing temperature, and proper temperature for pickle; at the end of four days, when your first "overhauling" comes along, they are nice and firm and will contain what is pumped into them. If, on the other hand, your hams are too hard, perhaps shanks frozen, or close to it, they are not in a fit state to receive the pumping, but, treat them as in the case of the other ham, and at the end of four days they will have thawed out, and still be firm, which is the proper state for a ham to be in when being pumped.

In pumping hams great care must be taken that the pump is perfect, otherwise you will have trouble. Be sure that the pump at each stroke throws a steady stream until the handle is fully depressed. Be very careful that the pump does not leak or "suck air."

In "pumping" the man who uses the needle should have it impressed on his mind to direct his needle along the line of the bone; the ham is placed on a stand, face uppermost, with the butt towards the needleman. His first insertion of the needle into the ham is directed so as to catch the joint in the shank, the second in the body along the bone, and a third in the butt in the same direction. In heavy hams this may be increased to two insertions each in the body and butt. The reader is already aware that attached to the last ham put in the vat is a tag with data concerning the contents; on the back of this tag it is desirable that the "overhauler" put his initials as also the initials of the needleman of the pumping gang. The fact of knowing that you have such a "tab" on them, will make them more cautious in the work. The "overhauler" will not catch a ham on the face and so tear it if he did so, nor will the needleman allow the ham to leave him until it is properly pumped. The latter, if properly instructed, realizes the im-

portance of the work he is doing and knows that if any sours show up he will be called to account for it, as following out the instructions I have given thus far, there is no excuse for sour meat, and there will not be any unless someone neglects a part of the work allotted to him. I do not think that the packinghouse man engaged in manual labor is any more prone to neglect of work when not being watched than those in other lines of life, but I do think that on such important work, where a little carelessness will lose a lot of valuable property, that you cannot take too many precautions, and let the man know that a "tab" is being kept on the way he performs his work. He will not feel hurt at this, as you have before described the importance of it to him, and he already knows from his experience with you, as head of the department in which he works, that you will treat him fairly, and while you are necessarily strict that you are also just. He may not reason in those words, but let the head of the department act in this

way and the most stupid man he has working for him will not be slow to find it out, with the result that the man, or men, will show an amount of loyalty, without which no house can be operated without losses that should not occur if the department head only uses the tact and judgment his employer is paying him for.

But I digress. There is also another very important feature in connection with the "pumping" in the first "overhauling," and that is the placing of your vats. With the overgrown nearly 3,000-pound vat it cannot be done unless with great loss of time.

In a room where all the space possible was utilized to place the vats, and "double-deck" them, there was a very crowded condition, but in the new way an entire change must be made.

The vats previously were "doubled-decked" on the double line, so that the "overhauling" could be done without disturbing the upper tier. In the new way they must be "doubled-decked" on the single line, and to get at the lower tier the

upper vat must be "overhauled" and then moved out with the aid of a "crow" bar onto a stand for the purpose, with an iron-covered top. The same number of vats will be carried in a room, as before, and in addition, the new style will, with every two lines of vats, give an alley wide enough for a truck to go through, so that any date or "packing" is available at all times. This may seem strange to anyone who has not worked both ways, but it is a fact.

The vats must be arranged in this way so that the "pumping" gang can get between each two tiers. There will be an additional expense of an assistant for the "overhauler" at this time, but the latter will accomplish the same number of vats as before, and thirty vats of 1,400 pounds is a good day's work. You will also have the satisfaction of knowing that your hams will be absolutely free of "sour" unless in very rare cases, caused by some carelessness which possibly could be traced.

Hams are necessarily slow in curing, but there is no need to wait till they are cured to find out how they are coming along. The method of doing this is known as the "thirty-day inspection."

CHAPTER VIII.

Length of Time Required to Cure—"Forcing" the Cure—Fermentation an Important Factor—Handling Sweet Pickled Meats.

It has been generally conceded by packing-house men, and ham-curing experts that any "sour" that there is going to be in a ham will show in thirty days. If "sour shanks," "marrow," or "bodies" do not develop in thirty days, there will be no sour; that is, thirty days from date of "packing" or putting into cure. So, at the appointed time an inspector will take so many pieces from each vat of a certain number of the packing and will include in this five or six dates, as the inspection is only made weekly. The inspector makes out a slip showing the dates, the

number of pieces of the different averages, shows how many "shanks," "marrows," or "bodies" he found "sour," if any; so that right along you know exactly how your curing is coming along. It certainly is a very pleasing sight to the head of the department to scan this report of the inspector and find not one sour under the different headings. Don't think for a moment that the inspector "fixes" this report so as to read that way. My experience has been that the inspector was even closer than I cautioned him to be on this inspection.

This description may not be very clear to anyone not acquainted with the work, but I regret that I cannot explain myself more fully without going into a long preamble. The hams being packed and pickled, they are allowed to remain without disturbance till the fourth day, when they are taken out, "pumped" after that, and placed into the new vat, and placed as they were before. This is the first "overhauling," and in a case of emergency it may be allowed to run five days, but not over.

"Pumping" and "overhauling" in this manner may be a little awkward at first, but in a few days the men will accommodate themselves to it. The second "overhauling" takes place ten days from the first, and the third and fourth are also ten days apart, as also is the second and third. The hams are then allowed to remain undisturbed till cured and required for use. During the time of curing care should be taken that the temperature is kept even at 37 degrees, which is, under ordinary circumstances, a good one.

The length of time a ham will take in cure will depend, of course, on its average, or size, and the temperature of the room and with the temperature mentioned, the approximate time will be forty to forty-five days for 10 to 12s, and 12 to 14s, fifty-five to sixty days for 14 to 16s, sixty-five to seventy days for 16 to 18s, seventy to seventy-five days for 18 to 20s. While this curing time is as near correct as can be given on paper, it is not always to be relied on in the case of sending hams to "smoke," and it is always to be desired that, when close to cure, a

sample be sent of, say, a dozen hams to "smoke," by which you can determine the safety of a full house.

The number of days given approximately for the curing of hams can be reduced very much under certain conditions, known as "forcing the cure," if your house is very short of hams, and required to fill orders. The temperature may be allowed to go up two degrees in the case of the light hams, which will help, but the main forcing is done by "pumping" again on the second "overhauling," and, instead of stopping at the fourth, give a fifth "overhauling." This will bring your hams ahead ten to fifteen days, but this "forcing" should be done only when absolutely necessary, as the class of goods gotten out in this way are not so good a flavor as those allowed to mature more slowly, but occasions may arise when it cannot be avoided, unless orders are turned down. I write of a house shipping as high as fifteen cars of S. P. meats a day. While there are no tricks in this line of work, there are a good many things in connection with it that can

only be acquired by experience; for instance, a twelve-pound ham that will be cured in forty-five days may be taken out of pickle at the end of, say, thirty-eight days and piled on racks on the floor, and it will finish curing there as if it had been left in the pickle, with this difference that there could be no cause of complaint from those who say that a very mild cured ham cannot be made without the use of prohibitive preservatives. The reason of the mildness in this particular ham can be easily understood. A lower temperature than the one quoted here for curing will retard the cure on the principle that the meat under greater cold will become more solid so that the pickle will not become absorbed so easily, while in a higher temperature than 37 degrees your sweet pickle is apt to become "ropy" before the hams are cured. "Ropy" pickle is a condition in which no man wishes to see his curing finished, as it is the post stage of sourness from fermentation and whether the pickle in the ham ferments or not, it does not, to say the least of it, add to the flavor of the

ham. Don't confound this with a "pickle sour" ham.

Where sugar is used in pickle, and those known as "sweet pickle," there is bound to be fermentation. Fermentation is induced at a temperature a little over the melting point of ice, its activity increasing until the maximum is reached, about 90 degrees F., when it diminishes down to nothing, and at 120 degrees F., or around there, it is killed. So it will readily be seen how hard it is to carry the sweet pickle ham, in or out of pickle. Detrimental as the fermentation is to the ham in general, yet it is to this that is due the soft, mild flavor of the most luscious of hams, when taken at the right time. It is fermentation which takes away the harsh taste of the salt, not the sweetening properties of the sugar directly. If there is any doubt of this, make a test of a vat of hams, using saccharine instead of cane sugar. With the former there is no fermentation, but the meat has a hard flavor, and, while sweet, it will not mix with the salt, leaving two distinct flavors,

the salt and the sweet. Fermentation is such an important factor that it should be kept under control as much as possible by refrigeration up to the time of going to "smoke." The packer who makes a shipment of S. P. hams to Europe without providing refrigeration on the steamer is taking chances, especially in the summer time. Hams on an order of this kind are generally packed in boxes, shipped in S. P., that is, they are not "smoked." "Smoking," in the absorption of pyroligneous acid by the meat, arrests the fermentation, but hams, if they can be carried safely in transit, are the better of being "smoked" at their destination. The fancy grade of breakfast bacon, such as is put on the market in this country, which contains a very large amount of sweetening, will not stand exportation at all, the flavor being injured so much that the ordinary breakfast, or common clear bacon, is much preferable to it. Even pulling it out of the vast and piling it on racks in the curing room for, say, ten days, will give it that flavor, and it can easily be detected, so that it should be sent

to "smoke" within a day of coming out of pickle. All sweet pickled meats are subject to fermentation; it is going on long before it is detected, and the greater the amount of sugar used, the greater it will be; S. P. meats are intended for quick consumption, and the sooner the consumer receives them after curing and "smoking," the more palatable and agreeable the flavor. When a S. P. ham is old, the fat becomes rancid, but the ordinary purchaser cannot tell what is the matter, except that it is not good flavored, while an expert can readily tell the reason; he knows that fermentation is the cause of it.

It will thus be seen that the curing should take place in as low a temperature as possible compatible with dispatch. To cure in a temperature below 37° F. would make the process too slow for the requirements of the trade, while a higher temperature will cause fermentation in your sweet pickle to such an extent that before a medium or heavy ham is cured, it is apt to have a deleterious effect on it.

Were the curing rooms in a house of such an extent that the hams need not be taken out of pickle till required for shipment or "smoke," the meat could be kept in better shape and flavor than by any other method, as directly they were cured, and finding that they would not be required for use then, refrigeration could be turned on till the thermometer dropped to 30° F., or below that, which would make the ham so solid that no more salt would be absorbed, and so hold the hams without coming in contact with the air; they would not freeze at 30° F. But unfortunately the premises are not extensive enough for this, so when the hams are getting old in "cure" and the room required for fresh packing, they have to be pulled out, drained, wiped and packed in tierces and stored in a good temperature—say 20° F.—which will keep them in good shape without freezing. On pulling the hams out of pickle for this purpose, they should be nicely piled on clean racks, not too high, so that there will not be too much pressure on the lower layers, and allowed to drain four days,

then wiped clean with cheesecloth, packed in newly washed tierces, headed up and "blown off." Hams treated in this manner will come out bright and clear when required for "smoke." To men who are not accustomed to handling hams in large quantities this may seem a rather expensive method of carrying hams in storage, but it is the only way of handling them to keep them sweet and clean, free from that yeasty smell caused by fermentation, this yeasty smell afterward turning to rancidity in the fat of the meat.

In the "good old days" the method with tierce stock—that is, hams cured in tierces—was, when the pickle was getting "ropy" through age and bad temperature, the bung was knocked in and the tierce then turned bung-hole down over a sewer and allowed to drain, when a new bung was driven in and the tierce rolled away to put in storage. This was supposed to be a saving in handling, while in reality the man who ordered it done was spoiling good stuff; yet he would feel very much hurt if told so. While this meth-

od is a remnant of those "good old days," I regret to say that such ignorance and carelessness is still carried on in many instances, and the purchaser wonders why it is that now and again he gets a ham of a certain brand that is not very sweet around the bone, the marrow as he slices the ham being smeared across the face of the cut, with the saw, of an offensive smell, and the outer part of the fat of a strong rancid odor; at other times he finds hams of this brand all that could be desired. I have already described what is known as the "thirty-day inspection," and any S. P. hams found sweet and clear of any taint then will not become tainted afterwards unless through gross mismanagement. I presume, of course, that the house has provided adequate means for the meat being handled in a proper manner, and there are few places now that lay any claim to up-to-dateness that do not give this matter the attention it requires, as they long ago have become possessed of the knowledge that S. P. meats require just as much care and attention after cure as they did before

and while in cure. Should a house not be provided with proper facilities, the proprietor or manager, on proper representation from the head of the department, will attend to it, especially if he caters to the export trade.

CHAPTER IX.

Trimmings for Pork Sausage—How they May be Kept Fresh—Another Way of Curing in Pickle—The Kind of Tierces to Use.

Not long ago an article appeared in a New York paper, in which a noted man in connection with the meat-packing business in this country was quoted as saying, in London: "American packers, if they are ever to regain the trade lost here, will do so at the expense of years of effort."

That gentleman presumably knew what he was talking about, and, of course, meant all kinds of meat in the trade referred to—fresh, cured and canned; but there is none of those that require more careful handling and attention on the part of the packer than the sweet pickled meats from the time of purchase of the animal

till it is delivered, cured, to the middleman or consumer, when "it is up to him."

The public desires a mild cured ham or bacon, and the only way to give it to them is to add to the curing pickle a certain amount of sweetening, preferably in the form of cane sugar, and I have already described the effect of this sugar, unless under great care and judgment, when it can be delivered cured in good shape.

Should the public require a ham to keep sweet under any and all circumstances, give them a dry salt ham or a plain pickled one. The further you get away from this plain pickled ham in the scale of sweetness, the more care must be exercised in handling it to carry; and if men in charge of sweet pickle curing departments will give this the consideration it deserves, seeing personally to the smallest detail, they will have done their part in regaining this part of the foreign trade and in making American meats standard, both at home and abroad.

There is no one part in the detail of handling the hog that can be neglected, if intended to go

into sweet pickle. The head of the curing department—let him be ever so careful and intelligent—may have his work upset by the actions of those through whom the hog passed before coming to him cut up. His hams may look nice passing over the table, through the inspector's hands; but through any neglect in the method of procedure since the time of purchase of the hog, from the different hands through which it passed, there will be a riper field found for the process of fermentation, which is at once the life and the curse of the S. P. ham, and it has taken place long before it can be detected in any ham in which sugar is used.

I don't know that any such opinion has been expressed before of this class of goods—I never heard or saw it. I write from experience, and I know of at least one man, than whom there is no better authority in the country, who, I am positive, would indorse these statements I make.

The majority of packinghouse men, though some of them are considered experts in curing, do not give the subject this close study; but take

the matter up as I describe it, with a chemist, and get his opinion. I've been through this and can write confidently on the matter.

I have heard that the Secretary of Agriculture made the statement that he wished to make American meats the foremost in the world. He can do so if he gets the proper coöperation, or puts this part of the work under the supervision of a man who, by his knowledge, will convince the packers that his method is correct and that he understands the subject he has in hand, and so insist on this coöperation on their part.

In the curing of hams since the Act of Congress June 30, 1906, went into effect, it has been stated that it was impossible to cure them with as mild or fine a flavor as before, when preservatives of all kinds could be used. Now, of course, it is prohibited and nothing allowed except salt, saltpeter and sugar.

I cannot understand how any man of intelligence, pretending to know anything of curing meat, could make any such assertion. Recall to mind the incident of the farmer's curing, describ-

ed in a former chapter. He used no borax, boracic acid or other agent of this kind in curing his meat, nor, when his wife made some pork sausage, did she use any of those compounds "without which sausage wouldn't keep" to preserve them. She never heard of those preservatives; yet her sausage was delicious.

Why all the agitation that has taken place in some papers devoted to the packing industry on the subject of mild preservatives? It was not (as any practical man should know) because hams could not be cured without using these preservatives.

There is one very important feature in the making or manufacture of pork sausage—the trimmings for such require to be fresh. There are certain times when those trimmings are plentiful—so much so that the supply exceeds the demand by a long way. What is to become of this excess? Houses bought those trimmings by the carload or half carload at times, and to put them in pickle would not suit at all for pork sausage—

but how to carry them fresh? In the freezing process the quality and flavor were injured.

There was a way, though, in which they could be carried fresh, or so nearly so that when the sausage was made from them no trace of salt could be tasted, unless what is always required to suit the palate; in fact, if handled by an expert, salt had to be added in the "mixer" with the spices. The way of doing this was: The trimmings were put into a vat of plain pickle for about fifteen minutes, then forked out on racks to drain and turned over so that they did not absorb too much of the pickle, or that it did not stick to them. Then those trimmings were put on a large wooden tray, so much at a time, and sprinkled over with a mixture of borax, boracic acid and sugar and thoroughly mixed, then packed tight in tierces, headed up and put into a temperature where they would hold as long as wanted and come out of the tierce with a very faint trace of salt, if any; those ingredients cannot now be used according to law in a House governed by Federal inspection. This was the

only way that a large amount of trimmings could be carried satisfactorily without freezing and suitable for pork sausage.

While the method of curing hams in vats has been described, there is another very important way, in pickle—that of curing in tierces; but, unlike the former, they must be "pumped" when being packed or put into the tierce, unless there is room enough to make all the "packing" in vats and on the first overhauling, when the "pumping" could be done, to repack in the tierces. While good stock can be got in tierce work, it is not so absolutely sure as is the vat stock handled in the way I described. There would be an additional cost if the hams were first put in vats and on the first overhauling packed in tierces after being pumped, but I am positive it would pay for itself, as there would be almost an absolute surety of the hams coming out, every one, minus shank or body sours. But stock can be carried longer in tierces in pickle than in vats, and also will be of a brighter color, from the fact that they are entirely sealed up so that

no open air comes in contact with either pickle or the meat from time of packing till the goods are required for "smoke" or shipment.

The critical performance in tierce packing is to see that your tierces are clean and sound, thoroughly washed from the last packing. Wooden-bound (that is, those having wooden hoops) oak tierces are the most desirable, and always in vogue, unless there should be such a shortage that the packer is glad to get any kind of tierces, so that they will effect his purpose.

Beef tierces, or those used in the packing or curing of beef hams, or clods, should not be used in the curing of pork hams, or calas, as your pickle is very apt to go wrong, especially if they are required to carry a long time; while beef tierces should not be used in the curing of pork, pork tierces may without danger be used in the curing of beef, and in all cases a good second-hand tierce is preferable to a new one. The wooden-bound tierces, as already stated, are the most desired from the fact that they are more snug and easier handled, will pile better, as the

thick hoops on either side of the bilge give them a greater bearing surface for the tierce piled on top of it, and altogether they look more "ship-shape."

CHAPTER X.

What Beef Hams Are—The Inside, Outside and Knuckle Constitute a Set—Used for Chipped Beef—Gain of Weight in Pickle.

In the first part of the last paragraph mention is made of beef hams, and perhaps it would be better if I describe what they are, as I'm afraid that there are some who may peruse this that do not understand the term and connect the word ham entirely with the hog. However, there are beef hams as well as pork hams. The beef ham is made from the leg or round of beef, and in the large houses is made on the beef cutting floor. When the loin and rump butt is removed from the leg or round, the latter is taken off the bench to the ham stripper, where it is faced

and trimmed up. It is then hung on a hook in a post, by the shank bone. Those pieces are known as the inside, outside, and the knuckle, and as their names imply, cover the bone on these parts of the leg. They are a solid piece of meat the inside being the heaviest, the outside next and the knuckle the lightest of the three. They are cured in a sweet pickle and then smoked and dried and used for chipped beef. These cuts are what are known as beef hams, the inside, outside and knuckle being called a "set" (set of hams). Another cut that is used very much for chipped beef is the "clod," a heavy piece of meat which covers the shoulder blade. With this brief explanation we will return to the packing of pork hams in tierces. In "scaling" or weighing the hams into vats, at the time of packing or putting into cure, it was shown that a uniform weight was put in each vat, 1,420 pounds of hams, net weight, constituting a vat full, and in calculating stock on hand, each vat was counted as containing this amount. In the tierce there is a slight difference; the hams are

weighed, the scale beam being set at 295 pounds, but, instead of marking (branding) the tierce with this amount, or, in taking stock, it would be as 300 pounds. Of course to any head of a current department this is nothing new, but it is not for their benefit I describe the transaction. To an observer who witnessed the amount weighed on the scale and then saw that the tierce was branded five pounds more than it actually contained, it would appear, if he was not posted, that there was something fraudulent in doing so. But no; it is perfectly legitimate, and in taking stock afterwards and counting those tierces at 300 pounds, though in reality there was only 295 pounds put into them, the stock man was quite correct.

To a member of the "profesh" it may seem silly to relate this, but there may be a number who will read this book who are not conversant with the curing of hams or cala, and I wish to make all the details in connection therewith perfectly plain. The reason of the discrepancy be-

tween the branded and the actual weight put in the tierce is that the hams gain in pickle in weight during curing. Hams at the time they are cured will have gained 6 per cent., by the absorption of pickle, from the given weight.

In shipping or selling the packer would allow to the purchaser 4 per cent. to cover loss by what is known as drainage and in weighing a draft on the scale of 300 pounds, the scale beam would show that the purchaser was getting 312 pounds, but in a few days this same draft would have shrunk to 305 pounds or around there by the meat becoming drained. To sum it up, the house would have gained 6 per cent. in curing, or more, if left longer in pickle, and gives to the purchaser 4 per cent., leaving the former 2 per cent. gain on the green or packing weight. Tierce stock was at one time sold by the tierce which probably gave rise to the marking of a tierce higher than what was put into it, and the same is done still but only used for taking-of-stock purposes.

This 4 per cent. given to the purchaser takes place only when the hams are directly pulled out of pickle, passed over the table and put on the scale. In the case of hams out of pickle and piled on racks on the floor, the drainage to be allowed would be determined by the two parties or their agents agreeing on a certain per cent.

In writing of gain in weight and drainage allowed to the purchaser on the weight he receives, I may mention that bellies, such as are used for breakfast bacon, and calas show a greater gain in cure than do the hams, in fact, it is most notable that the belly and the forepart of the hog will increase more in weight while curing in pickle than the hams or hinder part. The reason of this is that the latter are of a closer texture or formation than the former and will not absorb so much pickle. Drainage is weight allowed to the purchaser to cover that which is made by the absorbed pickle, the majority of which will drain or evaporate away in the course of a week in the case of hams, if allowed to remain out

of pickle. This drainage is calculated at 4 per cent. on hams, 5 per cent. on calas and bellies, 5 per cent. on beef, etc., and when given in full the meat must come directly out of pickle; should it be any time lying on a truck or on sacks the drainage will then be allowed as already described. This, of course, relates to the wholesale trade.

This cala mentioned here so often is a contraction of the name California, and is a cut made out of the shoulder and was known as Cala, or California ham, or picnic ham, but under the new ruling of the Department of Agriculture the word ham is deceptive in this case, and the cut must be called Cala or California, or picnic shoulders.

CHAPTER XI.

Packing of Tierce Stock—Blowing off to Detect Leaks—Breaking Down the Piles and the Reason it is Done.

To return to the packing of the tierce stock. As soon as the draft is weighed, 295 pounds in case of hams and 287 pounds in case of calas, the man packing or his assistant will sprinkle a little fine salt in the bottom of the tierce and proceed to lay his hams in, after they are pumped, butts down the first tier, then a slight shake of salt to prevent the hams sticking, his next tier or row will be put in shanks down and so on each alternate tier until all of the draft is in the tierce, shaking fine salt each time to prevent, as before, sticking. The tierce is then wheeled out to the cooper, who puts in the head and tightens

it up, "blowing off" the tierce to make sure it is perfectly tight and that it will not leak. This "blowing off" means boring a hole, say ¼ inch, in the head, applying a hose carrying compressed air so as to put the tierce, inside, under pressure, when, if not perfectly tight, the air will force its way out through any weak spot and can be at once detected and the cooper can correct the fault. This "blowing off" some years ago was done by the cooper with his mouth instead of compressed air, but, for sanitary reasons, this method has been done away with. After the cooper is done with the tierce it is taken in hand by the "brander," who, with a stencil plate, will brand the head, showing the firm's name, the goods contained therein and the weight (300 pounds), as also the number of pieces and the date. It is then rolled to what is known as the "pickle bed," where the bung is knocked in by the pickler, who then inserts the nozzle of the pickle hose and fills the tierce with pickle and then puts in a new bung, when it is ready to be

taken away to the floor or place where it is to be piled.

From some cooperage factories the tierces run very uneven, so that when they are packed with hams they will take all the way from twelve to fifteen gallons of pickle, while a well-made lot of tierces will not vary half a gallon. This is a very important feature in the curing of hams, as there will not be that uniformity of cure which should be so much desired owing to the difference in the amount of pickle in each; the greater quantity of pickle to a given amount of meat the greater the quantity of salt to be absorbed by that meat. In getting a lot of new tierces the cooper shop, to where they should be delivered, should look out for any irregularity in size, and repack such.

In the piling of the tierces, after being pickled, they are handled by six men who form the piling gang: the first tier is laid down, care and attention being given to them so that they will lay perfectly even and in line. After the end tierce is "chocked" so that they cannot move, the next

tier is started by lifting the tierces on top of the former row, great care given to the exactness with which they are kept square, otherwise when the piling is finished you will have a very unsightly piece of work and also a dangerous one, as, if the overhead tiers should overhang they are apt to come down.

As each tierce is thrown up the end must be closely watched in case of any leakage, if the tierce should be allowed to fall too heavily; the third tier is thrown on top of the second, two lifts being made in this case, the first from the floor to the top of an old tierce known as a "dolly" and then from there to the pile on top of the second row. After the tierces are piled three high they are allowed to stand for ten days. Some break them down before, but, with the rolling they've already had, ten days will be time enough to repile them. The top end tierce is marked on the bilge with the name of the product, pieces, average and date of piling. This is done with chalk by the piling gang when the lot or section is finished. As all the different aver-

ages must be kept separate so that there will be no "mix up" by finding two or three averages in one place and some of the same kind in another, great judgment must be used by the man in charge of the piling gang in getting a suitable place for an average or lot so that there will be no loss of room. Calas will, of course, be kept separate from hams.

After ten days the pile may be broken down and repiled in another place. If the breaking down is done by a good man the tierces will receive no injury, as they will be eased down to the floor so that the sound cannot be detected. In the hands of a careless man all kinds of damage may be done, such as breaking "chines," springing leaks, etc. The object of breaking down and rolling to another part of the floor and repiled is for the purpose of stirring up the meat and circulating the pickle, and this operation takes the place of the overhauling in the vat stock, before described.

After this breaking down and repiling they are again broken down at the end of fifteen days

and again repiled. They are again broken down a third time, rolled away to another part of the floor, perhaps only two sections, or about 35 feet, and repiled four tiers high, four tiers being an indication that the breaking down and repiling of that lot is finished. Great care must be taken in picking out a man who is to run the piling gang, as it is a very important post, more so than many consider it, as on him will partly depend the safety of your meat in curing. He must keep his eyes opened for any leaks started by throwing up the tierces, see that any leaky tierces are taken out, see that the piling is perfectly square and that the floor is kept clean and dry where his piling is being done.

Some piling gangs have a habit of using sawdust on the floor to keep from slipping, but it should not be tolerated, as, when it gets mixed up with old pickle, especially beef pickle, it is apt to cause a smell that is very obnoxious. I had an experience of this once. On going around a floor in which nothing was stored except beef hams in tierces one day, I fancied I detected a

slight odor, but so slight that on closer inspection I could not find the cause and the smell seemed to vanish. A few days afterwards I was going over the same ground, and this time the odor was so pronounced that I was certain that one or more tierces had run dry before the pickle had gotten into the meat and the latter was spoiling. I immediately got a piling gang to work breaking down a row of tierces, sounding each tierce, but could find nothing in the shape of a dry one, and not until four rows or a whole section was broken down and cleared out did I find the cause of the smell, and it was pretty "loud" by this time. I found that it was caused by sawdust that the piling gang had used to stand on, becoming saturated with some old pickle, and as its age increased it gave off that smell which might be expected from a dry tierce in which the beef had gone bad. The expense of the work coupled with the anxiety it caused me decided me to abolish the use of sawdust where piling was being done. Coarse salt, or Michigan fine, will answer the purpose equally

well and there is no danger of any offensive odor arising from it.

The last piling, or the four high, requires more care even than any of the other pilings, as it is so high that the full gang, six men, will be required to accomplish it. The tierce is lifted from the floor to the "dolly" and allowed to rest there a few moments while it is straightened and laid in proper position, as no piling gang who thoroughly understands the work will attempt to throw it up until it is in a certain position on the "dolly," in fact, it is amusing to watch them at times and see the antics that the "boss" of the gang will cut in sizing up the position of the tierce so that it will be in the necessary place. Two men get at each end and one at either end with a barrel stick, which he places under the "chine," which is known as a "stick lift," and at a given signal the tierce is thrown up, and if the gang is careful and in the habit of working together, it will just go high enough to clear the other tier and land so lightly that you will hardly hear it fall; it is then squared in

its place. If you have a piling gang that lets the tierces fall hard, find out who is the cause of it and change him, or them, at once, as while a tierce is pretty substantial, it is very easy in this way to start it leaking. In a large house those men do nothing else and after a little practice will, or ought to, work together like a well-regulated piece of mechanism.

CHAPTER XII.

AVERAGING AND OVERHAULING BELLIES—ATTENTION TO CLEANLINESS AND TEMPERATURE—DEPARTMENT HEAD SHOULD UNDERSTAND CHEMISTRY.

We have now finished up the packing and curing of hams in vats and tierces, and the rules which have been given governing the handling of this stock will also apply to calas, shoulders, etc., cured in sweet pickle, as also of another product closely allied to the cala—that is, the cala butts, sausage meat, boneless ham, or whatever appellation is wished to be given to this class of goods. In packing there is, of course, no pumping; but the packer's assistant must keep up a continual shaking of fine salt while the meat is being put into the tierce; this, as

already mentioned, is to keep the meat from sticking together, as it otherwise would, and more so in the case of this "sausage meat"—so much so that there would be positive danger of it sticking so firmly as to form lumps, to the exclusion of the pickle, with the result that there would most likely be a lot of sour meat when the tierce was opened. The heavy sprinkling of salt will add materially to the strength of the pickle, so allowance should be made, in mixing it, for the salting which the meat will receive. In some houses a different strength pickle is made for this meat, but in others the regular ham pickle is used with good results if the meat is required just as soon as it is cured; carrying it long in pickle of the strength mentioned, with the addition of salt sprinkled on it during packing, makes it too salty. It is subject to the same overhauling and pilings that calas are.

Bellies, when there is a demand for the meat, as fast as cured, are put in vats, skin down, with a shake of fine salt on each layer until the last layer is reached, when it should be placed

face down, the last piece having a tag attached to it which should hang outside the vat, having all the data concerning the contents on it, as in case of the hams. All the vats in the house being of uniform size, those used for bellies will be the same as for hams, but instead of packing them at 1,400, as in the case of the latter, they should be packed at 1,300, as from the formation of the belly it will lay closer together than will the hams, so a greater opportunity must be given it to raise or separate when the pickle is put on, hence the packing at the lighter average.

Bellies will, of course, be averaged and "scaled" before packing. The first "overhauling" in vats of bellies should take place three days after packing, and the other overhauling at intervals of ten days. Bellies do not require such long chilling as do hams, and may be packed on the day they are cut, nor need the temperature of the curing room be so low, 38° F. being a good one. Have the vats washed thoroughly clean, a uniform weight put in each vat, packed no heavier than described, with the overhaulings

taking place as directed, and there will be no cause of complaint when the bellies are cured.

Pay particular attention to the cleanliness of the floors and also to the temperature, as while the bellies will not be so long in curing as hams, remember your meat is in a pickle of which cane sugar forms a part, and consequently fermentation is going on, though you see no sign of it, and the higher the temperature the greater the activity of this fermentation. Fermentation is a matter that has been brought prominently forward in this book, simply because it is dangerous beyond a certain point—dangerous to the flavor and carrying properties of the meat, and it is a subject that is not given the importance in packing houses that it should get from men who should be thoroughly conversant with the advantages gained by it, and also the danger to look forward to from it when it has passed a certain stage.

Knowledge of enzymes, fermentation and that ilk are more in the chemist's line than that of the old packinghouse man, but unfortunately

for the house that employs him the chemist knows nothing of the work, nor will the department head call him in and ask him his opinion on matters of the kind, for the reason that he argues, "What the Hades does he know about curing meat?" or he is so wrapped up in his own importance and knowledge that any inquiry from an outsider would be detracting from that knowledge and dignity.

All this is wrong—very wrong—and the department head would soon admit it if he took the chemist into his confidence in the matter and listened to the explanations which he ought to be able to give him on the different changes in pickles, where fermentation commences and stops, where and what arrests it, when and why sugar ceases to ferment and becomes a curative agent, etc. These and thousands of other things he will enlighten the department head on, but the chemist must be made familiar with the work to give an accurate analysis.

I do not mean to detract one iota from the department head nor take any of the credit away

that belongs to him, but to handle meat thoroughly and successfully he should be possessed of a certain amount of chemical knowledge that to-day is rarely found among this class of packinghouse men, let his reputation as a curer of meat be ever so high. Some of the older heads will perhaps sneer at this statement and say they can cure meat without a chemist's aid; well, perhaps they can, but how about all the spoiled meat that went to the tank—that is going to-day? How about those "sour bodies" that are blamed on the killing of "fresh hogs"? The chemist works on facts, and each step he takes is positively assured by his calculations before he puts it into effect.

The packinghouse man—be he head of department or general superintendent—in the curing of meat works without that absolute surety that should be his. If his meat comes out right his reputation as a meat curer is added to; if some of his meat goes wrong—well, it was a "little off," and he will go to the department clerk and get him to find out if "fresh

hogs" were killed on the date of that packing. The department clerk may find it was so. The "fresh hog" story was exploded long ago; still, some cling to it at times.

As against the chemist, the department head thinks he knows all about it, but he doesn't know all that he should know. For instance, he thinks sugar is the cause of the soft, mellow flavor of a fine S. P. ham. Sugar produces it, but it is not the cause of the mellow flavor. He thinks that saltpeter gives the red color to meat, but again he is mistaken; it produces, but it is not the cause. In a former chapter I explained this.

In addition to a good knowledge of chemistry the department head should also know something of biology, and with those acquisitions he certainly would be able to handle meats and carry S. P. meats in better shape than they are carried to-day in many houses, either in storage or in transit from one place to another.

It was my good fortune to meet a chemist of the house, whom I took through the department

and made him familiar with the modus operandi. It was entirely new to him, and he was delighted. In return he gave me information that cleared up several things which I was not very clear on, and I am indebted to him for some chemical knowledge which I possess and which I found very beneficial in the general handling of meat and its legitimate curing agents.

That the department head should become acquainted in this line is emphasized by the fact that a paper devoted to the packing industry in this country puts forth this: "The question of proper temperature for curing storage is not so decidedly important if the meats are properly and thoroughly chilled prior to putting in salt or pickle; anything around 40° F. being perfectly safe." This was the last paragraph of an article giving a sweet pickle cure.

The statement may have emanated from an office man or a lunatic, but certainly never from a practical man who understood the subject thoroughly. Did the person who made the statement know anything at all about meat curing, he

would not have any "ifs" about the chilling of the meats, and he would also know that the temperature of his curing room was not regulated by the conditions of his meat. For the information of the maker of that statement and for those who gave it serious attention—if there were any—let me tell them that it is most decidedly important to have a properly regulated temperature, and that 40° F. is not safe. I mean pickle containing the ordinary amount of sweetening, such as is used by houses in general, and such a pickle as was described in the article of which the quotation is a part. The amount of sweetening used by each house differs very little in the "regular" hams.

Refrigeration is used for the purpose, principally, on sweet pickled meat, of keeping down fermentation; otherwise the temperature could be carried safely at 40° F., or even above that, in the case of hams being cured in plain pickle.

In one of the earlier chapters I gave as near a definition as possible of the amount of refrigeration to be used in curing meat (hams), and if

my memory serves me I said "hams should be cured in as low a temperature as possible, compatible with dispatch," giving 37° F. as the most suitable. Thirty-five or thirty-six would make the process too slow for the requirements of the trade. Higher than 37° would, in the case of medium or heavy hams, allow fermentation too much scope, so much so that, even though the pickle, when cured, will show no sign of it in thickness or "ropiness" directly after "smoke," the rancidity in the fat caused by the free fatty acid fermentation, accelerated by the sweetening, will be easily detected.

Of course, it makes a material difference whether the hams are required for "dog meat" or for the table of an epicure. If the former, little things like fermentation do not count, as canine tastes are rather depraved, but it is the boast of every packing house that I ever heard of that the hams were suited to epicurean palates, in which case fermentation must be kept down below a certain point, both for flavor and

carrying purposes, which are one and the same thing.

Thanks to the paper which made the assertion here quoted, I think I have proved that the curing department head should be in closer touch with the house chemist and have some heart-to-heart talks with him, which will ultimately result in clearing the brain of the former of a lot of fogginess and give better results to his house and better hams and bacon to the country. Get in and have a talk with the chemist, and among the many things he will impart to you, and which is an inexhaustive subject in connection with S. P. meats, will be an analysis of fermentation. Just now you think sugar, in addition to its sweetening properties, is a curative agent, but he will show you that it is a fermentative one, and does not become curative before it reaches a certain percentage, which is a long way above what is used in the sweetest pickle. When it reaches this proportion its fermentative properties will be killed and it will then be entirely curative. Sounds perhaps strange,

doesn't it? but there are more strange things in connection with meat curing, especially S. P. meats, than the ordinary meat curer ever dreamed of. Nor will he understand it until the time comes when chemistry and biology are brought in and considered necessary requirements for the practical meat curer. There was a time when the amount of sour meat was appalling. To-day it is much less, and in some houses there is none. This is due to care and good judgment, and most of all to increased facilities in the shape of better rooms, more even refrigeration, etc.; in fact, in any well-regulated house there is not a shadow of excuse for sour meat.

CHAPTER XIII.

WHY TONGUES IN CURE REQUIRE A DIFFERENT TEMPERATURE THAN HAMS—HOW NATURAL JUICES ARE EXTRACTED AND AGAIN ABSORBED.

Tongues are about the only staple goods that are left of the hog to go into S. P. As the initial step in curing hams is taken on the hanging floor, so is the initial step in curing tongues taken on the killing floor, and the dispatch and cleanliness with which they are handled there are a sure indication of the results to be expected later on when the tongue is cured.

In some houses, especially the smaller ones, they are allowed to lay around a good deal before they are given a wash. I include beef as well as pork and lamb tongues in this. In the

case of beef tongues they should be handled immediately after they leave the hands of the tonguer. As before described they should be thrown into a tub of cold water and brushed singly to remove the slime attached to them, and also trimmed and then thrown into another vat of ice water, from where they are forked into a slatted truck and taken to the curing department, where they are hung up, singly, on racks for the purpose. Temperature, 39° or 40° F. Beef tongues should be treated in much the same way. Directly they are taken out of the head they should be washed and scrubbed with a brush and hung up on racks to cool, from where they are taken to the curing department and hung up to chill. Lamb tongues as described before are sent to the sausage department to be scalded, skinned and trimmed, then taken to the curing department and spread on clean racks or hung up to chill.

Lamb tongues, when sufficient are not on hand for a vat, may be put into a tierce, and when two or three tierces are filled they may, with

the regular day's packing, be put into a vat. The temperature for the chilling of tongues of all kinds is best at 39° F. to 40° F., and 24 hours in this temperature will not leave a trace of animal heat in them.

When ready to pack the beef and pork tongues have your vat, or vats, thoroughly washed with scalding water and soda and properly rinsed in clean cold water. Place the vat in position and put about half the required quantity of pickle in the vat and then put in the tongues without any regularity until the required weight of 1,400 is in, the tongues, of course, having been previously weighed. Fill the vat up with pickle, put in the headings and brace down with the crosspiece.

All small meats packed in vats or other large receptacles should be pickled in this manner, as there is a greater surety of the pickle mixing up thoroughly with them than if the vat was packed and then pickled.

The pickling of tongues is done with the very strongest sweet pickle mixed, and 24 hours after packing, if the pickle on beef tongues is tested

with the salometer it will be found to have lost 15° to 20° in strength, due to dilution by the natural juices extracted by the pickle. Beef tongues will in this way keep losing in weight for 30 days, when they remain at a standstill, but in a few days will commence to gain, and if left in pickle for 30 days longer, or in all 60 days from date of packing, they will have gained to such an extent that they will then be the weight originally packed, or in other words, what the tongue lost by the extraction of the natural juices, it will gain by the absorption of pickle.

The large shrinkage in the beef tongue is due to the great amount of moisture in it—70 per cent. Pork tongues will also lose in weight, but not so much as the beef tongue, and will commence to gain in 20 to 25 days. Tongues should be overhauled on the second or third day at the latest, and are handled with a fork. They will require the usual overhaulings given to hams, etc., and will cure in 25 to 30 days in a temperature of 39°. Should there be any doubt of

tongues being cured a longitudinal cut in the tongue underneath will easily satisfy any one acquainted with them, whether they are cured or not, by their color, whether they are required for "smoke," canning or sausage room.

We have always mentioned tongues as being cured in a temperature of 39° F. as against 37° F. for hams. The reason of this is that the tongue is cured before there is any danger of the pickle thickening or becoming "ropy" from fermentation in, say, thirty days, and in the case I had in mind at the time of making that statement the tongues were always used as fast as cured. In a colder temperature they would, of course, take longer to cure, but, on the other hand, the more gradual the curing in this, as in all S. P. meats, the better the flavor. While there is a certain amount of fermentation going on during the curing of the tongues, it is not so much, or, at least, it does not affect this class of meat so much, as it will the fat of ham and bellies, as the latter is of an entirely different construction, and has in itself already that constitu-

ent, free fatty acid, which, with the micro-organism, saccharomycetes, induced by the cane sugar, will set up fermentation with greater activity, so that when the house requires them tongues can be cured in a higher temperature, consequently quicker, without any danger from fermentation, but I would not consider it prudent to go higher than 40° F. for a temperature. Should the house require the tongues very quickly, give them two extra overhaulings, which will hasten the cure very much.

The curing of tongues in S. P. is very simple, requiring only care and judgment in addition to the curing agents, but to hear of the process through some authorities it would make a person unacquainted with the work imagine that it was a very intricate one.

One authority who is supposed to know all about it, says beef tongues should be first put into an 80° plain pickle for 24 hours, and gives the reason for so doing that this will take all the moisture out of the tongue, or all the saliva, as it is termed. The tongue has been, as already

described as being, washed with a brush on the killing floor to remove all the saliva from the outer part, so that there is nothing of this kind adhering to it.

This authority goes on to state that after remaining 24 hours in this plain pickle the tongues are taken out and put into an entirely different pickle—a sweet one—to cure, and which, by the ingredients mentioned, will be about a 70° pickle.

It certainly is surprising how dense some men in this line are, and men from whom better judgment might be expected. Of course, the tongue, as I have already shown, contains a large percentage of moisture, but instead of putting goods into a plain pickle of 80° to extract this moisture, why not put them at once into a 90° sweet pickle to cure in?

This moisture which is extracted is the natural juices of the tongue and the "life" of it, if I may be permitted to use such an expression, and instead of curing the tongue in this first

pickle where it will absorb again some of those juices, this authority would have you take it away after it has lost those juices, or the best part of them, and put it into an entirely new pickle to cure in, so that all benefit by absorption of those natural juices in the pickle is entirely lost to it.

I have shown that there is a great loss in strength of tongue pickle the first 24 hours, as the absorption of the salt forces the natural juices out; but as they become mixed with the pickle, and a part of it, they are again absorbed —in a diluted form, it is true, but still absorbed.

I am pretty well acquainted with the handling and curing of meats, but I have yet to learn that the entire loss of the natural juices, or part of them, is any benefit to the meat. They are bound to come out, but why not give the meat an opportunity of regaining some, at least, of them, and cure it in the pickle in which they are?

Chill and cure the tongues as I have directed, and there will be no trouble with them. I can

pledge my word that I never saw a sour tongue but once, and that was in a house where I went to see some beef tongues that had been purchased by the people whom I was with.

CHAPTER XIV.

THE STORAGE ROOM—DAYLIGHT SHOULD BE EXCLUDED—BEST TO HAVE PIPING AT SIDES, NOT OVERHEAD.

The handling of the hams and bellies, calas, etc., were left at that stage where they were nearly ready for "smoke," shipment, or storage if there was no demand for them. We will say that the demand for hams and bellies was small, though a large stock was in pickle, with hogs, on foot cheap, which meant big "runs" and consequently big killing and cutting, so that the room for packing was required.

Were the premises extensive enough, as I once before intimated, with proper facilities for so doing, this stock could be carried better in pickle by turning on the refrigeration and drop-

ping the temperature to around 20° above, which would so solidify the meat without freezing that it would absorb no more salt, while, being in pickle, it would be protected from the influence of the air.

I have already mentioned free fatty acid, which is a component part of the fat of hams, calas, bellies, etc. (ask your chemist or lard man), and it occurs where rancidity does not exist; but it has been demonstrated by chemistry that rancidity is caused by the action of light and air upon the free fatty acid aforementioned, so that you will readily see, I hope, the reason why this class of meat will hold better when protected from light and air. But, being unable to have it this way, the next best plan is to have a storage room (which every house of any importance should have), a room which is so fitted with refrigeration that it can be kept at 20° F. Have daylight excluded, or, if there are windows in it which are fitted as cold storage windows, let the glass be yellow, or covered with a yellow semi-transparent composition, so that the

light which enters will be non-actinic. Should the room be "piped," let it be so around the sides, not overhead.

The storage room being all ready, clean off from the top of the vats any fungi that may have grown there and pull the hams out of pickle in the curing room and pile them on racks to drain, when, after two or three days, they are taken to the storage room and wiped clean, on a temporary bench or table; not rubbed over, but wiped thoroughly clean and dry with cheesecloth, and then neatly piled, skin down, on the floor till the last tier, which should be placed face down. A space should be left all around clear of the pipes, if any, and the hams should be supported by racks braced from the sides of the room. Three feet will be high enough for the pile; any higher would cause too much pressure on the lower tiers.

Hams carried in this way will come out bright and clear and free from any rancidity in the fat, but if the room is large enough it would be pref-

erable to pack the hams in clean tiers, headed up, and "blown off."

The storage room should have only one entrance, so that there will not be a current of air, the door shutting tightly and kept closed unless when absolutely necessary.

Bellies handled in the same manner will come out at the end of three or four months, as the case may be, looking better than when they were put in there, and will take a very pretty smoke if they were put in storage fresh cured, so that they would require little more than a wash before going to "smoke."

A storage room with half to one million pounds of bellies on storage in this way is, indeed, a very pretty sight, with its white painted walls and clean, dry floor, perfectly odorless, and the department head may well point with pride to the stock stored there, and its bright, clean look.

I do not think, though, essentially necessary as it is, that every house has a storage room of

this kind for carrying excess cured stock—not even some of the largest houses.

It is a great mistake to carry S. P. hams, calas or bellies in pickle in the ordinary temperature after being cured, as they go on, day after day, absorbing salt until, when they are required for "smoke," they have to undergo such a "soaking" in the washroom that the chances are in favor of them being spoiled, as, let the foreman in the washroom be ever so good a man, he is liable to give the meat more than it really requires, with the result that, in the case of the hams and calas, sour butts will ensue.

A properly equipped storage or carrying room is as essential to the up-to-date packing house as any other part of it, and, having a surplus stock of hams, calas or bellies coming along, they should be pulled out as soon as cured and put into this storage in the manner described. Of course, some judgment will have to be used as to how much should be put in storage, making due allowance for the requirements of the trade.

The bellies mentioned here as being carried in the storage room are the ordinary S. P. common clear, of all averages; not the light 6 to 8 and 8 to 10-pound bellies which make the fancy breakfast bacon, and which are cured in a much sweeter pickle. So much sweetening is used in this pickle that after ten or twelve days out of pickle, piled on racks on the floor in the curing room, fermentation can be easily detected by smell in the fat.

There is such a demand for this fancy breakfast bacon that there is not very often a surplus; in fact, it is more the other way, and there is a shortage now and again. Still, there are times when there is a surplus, and instead of trying to carry it as the fancy grade, it were much better to turn the excess over to the "smoke" house, when it is required, as common clear bellies, for ordinary breakfast bacon; as, from the large amount of cane sugar used in the curing pickle, it is impossible to carry it any length of time in perfect order.

I have seen this class of bellies put in storage

such as I have described; seen them sent to the freezer on being cured, and carried in a frozen state; seen them "smoked" when just cured, and then put in the freezer after they were properly cooled, and carried there till wanted, when they were thawed out and given a light "smoke" again, and while this latter plan seemed to carry them with better results than any of the others, they were not at all the bellies when "smoked" just as they were cured, all due to fermentation, which, from the greater amount of sugar in the curing, shows greater activity than it does in the common clear belly which does not contain so much sweetening.

Perhaps to people not accustomed to this fancy grade of breakfast bacon the fermented flavor would not be very noticeable, but to anyone in the habit of using it often for breakfast and whose sensibilities of taste are not blunted, the slightest change is very easily detected; the presence of salt, while of course there, is hardly perceptible, as it is overcome by the soft mellow

flavor given by fermentation in its early stages and before it has passed a certain point.

As mentioned previously, sweet pickled meats are intended for quick consumption, and this fancy grade of bacon or ham more than any other.

Some of my friends may think I have fermentation of the brain, I have so persistently brought the subject forward. Not so, my dear reader, it is the other fellow who is affected in that manner—I mean the one who gives the matter no consideration, laughs at my statements, and thinks he knows everything about pickles and the curing of meat. Well, he has another "think" coming.

Should there be a demand all along for hams, calas or bellies, the smoke house foreman will call on the S. P. department for what he requires.

If S. P. hams are properly handled, and the proper strength pickle used in their curing, and if then taken as soon as cured, they will require very little "soaking"—less than half an hour—

in fact, very little more than a wash; and the fancy grade, in which there is so much sweetening, will require only this wash with the hand brush.

CHAPTER XV.

PREPARING HAMS FOR THE SMOKE HOUSE—THE BEST WOOD AND SAWDUST TO USE—APPLICATION OF STEAM IN A SMOKE HOUSE.

When the hams are brought to the wash room they may be laid out on a bench to be "strung." Stringing means the putting of a string or cord through the shank by which to hang it. For the benefit of those who are not familiar with the work I will describe the stringing needle and the operation.

The needle is a piece of steel eight to nine inches long and about as thick as an ordinary lead pencil, broad at the end, in which there is a hole, or an eye, to carry the string. The end of the needle is arrow-pointed and sharp. The

other end is firmly fixed in a stout handle about five inches long.

When the hams are laid on a bench about hip high, the "stringer" comes along with the needle in one hand and a bunch of strings in the other. He puts a string through the eye in the needle and then sticks the latter through the shank of the ham, and, on pulling it out the string is left in the shank, while the man performs the operation on the next ham, and so on, going so rapidly that a good man will keep three men tying, who are following him up.

As each lot of hams which are laid out on the bench are finished by the men tying, they are thrown into a large vat to be soaked, or, in the case of very mild cured hams, which require no soaking, they are passed on to the tub or vat where they are held by the string and washed with a brush in hot water, 150° F., in which some salsoda has been dissolved. After a thorough cleaning in this water, which should be kept at this temperature, the hams as they are finished are hung on an iron frame or cradle,

or on "trees," either form being hung on an overhead rail, which goes to the elevator, which also carries a rail that connects with the one in the wash room when the elevator is down, so that the frame or cradle loaded with hams is shoved on the rail in the elevator and carried upstairs to either floor wished of the smoke house.

For calas the same operation is gone through. In the stringing of bellies they are laid on the bench, with what is known as the shoulder end outward, and two strings, one in each corner of this end, are passed through with the needle. In addition, bellies are, or should be "skewered"—that is, a skewer passed through the extreme end by which they are to be hung, passed through the center and breadth of the belly, so that when the belly comes out of "smoke" it will show the end smooth and square instead of being pulled at the points where the strings take the weight of the meat.

The hanging of the meat on a cradle or on "trees" traveling on an overhead rail in the wash room would indicate to the observer that

the smokehouse was also railed, and such is the case in the modern house. The advantages to be derived from this plan over the old one of having each piece of meat hung on a stick, laid on a 4x4 timber, are many. In the first place it is cheaper, next it is cleaner and more sanitary; again, the meat receives less handling, which is a very important feature after "smoke," as the less it is handled or thrown around the brighter and more attractive it looks.

The bright color given by a nicely regulated fire is very pretty, but also very fleeting, and the greatest of care must be taken of the meat both during the time it is in "smoke" and afterwards out of "smoke." The color will become dull and fade under some conditions, but a bright appearance can be prolonged if care is exercised. The killing floor is the place to clean the hog, and too much water cannot be used in connection with this cleaning, as the more there is used the greater the chances are of giving a good, clean skin. There are hogs whose skin will not have a bright, clean look, no matter how much you

try to make them look so, but hogs of this description are in the minority, and with a good scald the majority of the "kill" will show up with a good skin. Should the scalder have his water too cold or too hot the hog will not present the bright appearance so much desired, and nowhere is it more apparent than just as the hams, etc., come out of "smoke." There are cases where the scalder is hardly to blame for the irregularity of the temperature of the water in the scalding tub. The "house" or its management is often in fault in not having a tub of the proper dimensions, whereby a lower temperature could be carried and so get a cleaner and more even scald. If the scalding and cleaning on the killing floor has not been done properly, no washing or scrubbing that can be given the meat afterward will make up for this neglect.

If every detail is given the attention which it should get from the time the hog was "stuck" you will have a bright even smoke on the meat that cannot otherwise be obtained. The smoother the skin the more evenly will the smoke color

appear. Even a really rough-skinned hog will show up good out of "smoke" if it was properly scalded and afterward cleaned, so that there was no dirt left embedded in the skin.

So many different methods of handling are in vogue for the smoking of meats on a large scale, and each of them turning out a good "smoke," that it is impossible to lay down a rule as standard by which the work shall be done. The build of the house, size, height, etc., will have an effect, and my experience of smokehouse men has led me to believe that if they get the hams, etc., with a bright, clean skin, they will turn out the smoked article in beautiful form.

In the packing houses in general there is always, or nearly always, a want of room; consequently smokehouses are run up as many as three or four floors, whereas if there were room enough the houses that were built with just one floor above the fires would be the most satisfactory. The "smoke" would be more even and shrinkage could be more accurately figured than shrinkage figured on what takes place in a

house of, say, three stories high. This is not a true one; it is an average shrink. Some will say that each floor is weighed separately in and out, but I doubt it. The cost is too much, however. I maintain that the low house, or the one with the single "hanging," is the best; but, unfortunately, there is not room enough to build the smokehouses in this way.

The house, after being "filled," should be allowed to drip or drain and the meat dried by the aid of steam pipes, with which the house should be fitted, having the ventilators open. After the meat has arrived at that stage of dryness which the smokehouse man recognizes by experience, start the fire, using hickory wood, preferably, and when well lit up and burning clear, nearly bank with sawdust (hickory also, if possible), so that the latter is kept smouldering, giving off a good smoke, replenished when required and kept up for twenty-four hours, or longer, dependent on the class of trade the meats are required for. If for a trade where the hams are likely to be carried for some time, the

smoke should be heavier and the heat by steam should be kept on longer to give them a better drying, as the dryer hams are made in smoking and the greater the "smoke" the longer will they keep or carry, but, of course, there will be a greater shrinkage. For the ordinary quick consumption trade hams will shrink around 6½ per cent., while if they are intended for long keeping, dried and "smoked" accordingly, the shrinkage will be as high as 18 per cent.

When the meat has had what is considered sufficient smoke, the fire should be drawn or put out, but the experienced smokehouse man will have the fire gauged in such a manner that it will die out at the proper time. Open up the house and ventilators, which had been shut, so as to cool the meat as quickly as possible.

Meat can be smoked with almost any kind of wood, but those of resinous properties should be avoided. Corncobs give a good smoke, but for a light golden color for show purposes nothing equals straw. This last fades very soon, but when fresh on a fine skinned ham, which had

been properly cleaned, it certainly has a very enticing look, superior to anything that can be done with wood smoke.

The method of smoking meats has made very little advance, any more than that the rail or trolley system is an improvement, but there is very little difference in the mode of procedure between a first-class house smoking 30,000 and the farmer smoking a few hams in an inverted hogshead, bored with a few holes, over smouldering sawdust.

The application of steam in a smokehouse is of great benefit in the drying of the meat, so much so that very little heat is required from the fire, but a better method is that of hot water circulation, necessitating the use of a pump, which, while giving all the heat necessary, does not cause such a big shrinkage as do the steam pipes. Shrinkage of meats in smoke is a very important item, and in the larger houses is watched very closely. In the smaller houses it is not so much considered, or the method of reducing it to a minimum is not understood, and

even then hams for the local and ordinary trade will show a shrink of 14 per cent. and over in some of these places, and with all this heavy shrink in some cases the hams on the inside will, when cut, be soft and sloppy, but the latter feature is not due to any defect in smoking.

As soon as the hams are taken from the smoke-house they will be put in a smoked ham carrying room, which should be fitted with steam pipes, so that enough heat can be maintained in the room to take up any moisture in there coming from a damp atmosphere on the outside. In summer time, when it is warm and dry, there will be no need of steam, but on the slightest dampness appearing at any season hams or other cured meats will show their susceptibility to its influence, sweet pickled meat being affected more than will plain pickled, so that while any heat or dryness will, of course, cause further shrinkage, still the moisture must be kept out of the air in which smoked meats are carried if they are required to be at their best in appearance when being shipped.

Of course, the smoked meat department will see that an excess stock is not carried, and very little is smoked beyond what the immediate requirements of the trade call for.

CHAPTER XVI.

PACKING SMOKED MEATS FOR SHIPMENT—BOXES SHOULD BE PERFECTLY DRY TO ESCAPE MOLD—A LAST WORD ON BONING.

In packing smoked meats in barrels or boxes for shipment great care should be taken that the package is thoroughly dry, no matter what the distance they are to go or the length of time they are to be carried in this box or barrel. In a very short time, if in a box that is made up of wet or damp wood, mold will appear on the meat, and no legitimate means has yet been brought forward to stop or overcome the growth of this fungus when packed in a damp box, and the loss occurring in a house from this cause is at times deplorable, simply because no one seems to care whether the box for shipment is wet or dry or made from seasoned or green lumber.

All this class of goods before wrapping or packing should be thoroughly wiped, giving any pieces which show too much dryness on the skin or face a rub of a cloth dipped in lard oil and then wiped cleanly. This is a part of the work that is very much neglected in some houses, and while a man's wages may be saved now and then by the omission of it, it is a false economy, and the foreman should in some other way, if he only looks around, be able to save his employer that day's pay, instead of doing so at the expense of the reputation of the house for clean and attractive meats.

In the smoking of beef hams and also of clods a heavier and a longer smoke must be given. In the first place the meat must be dried more, and again the flavor of smoke is more sought after in the chipped beef which this class of goods goes for than in the pork ham.

If the beef which is used for chipping is not well dried, it will not chip or slice satisfactorily, and would, when put up in boxes, soon sour, so that it is absolutely necessary that it be well

dried and firm, and to arrive at this state it will have lost in smoking and drying around 30 per cent. Of course, some houses will put out smoked beef hams that will not show anything like this large shrinkage, but it is only an imitation of the real chipped beef, and the house that does it will never get a reputation for the latter.

In writing of smoking meats, the pork ham—and in the foregoing paragraph the beef ham has only been treated—the same rule will apply to calas and bellies as to pork hams.

It has been said that the best style of boned and tied hams was made from the green stock by boning and tying and then curing. I am aware of instances where the boned and tied ham is made from cured stock, and these people aver that it is the best form.

I emphatically state that it is not so. From the other style (the one made from the green ham and cured) a firmer and better-shaped article is made, if the one who does the tying understands it and whose occupation is other than that of a shoemaker alone, and the shrink in

cooking is less than when made from the cured ham. There are houses to-day in which the hams are boned green and then cured before tying. Why is this? What is to be obtained by such a process, unless an undue loss of the natural juices of the meat in consequence of the open condition? In a former chapter I stated that some people were afraid of the amount of sour meat which developed in the green boned and tied ham, and this method of curing before tying looks as if they were.

I described before how easily and quickly fresh meat will take up taint or smell and how necessary it is that the hands of the workman should be scrupulously clean, as also the tools he works with, as both will rub against the inside of the ham in taking out the bone. In addition to this, in tying the ham, the man doing so cannot help tying up pockets of air, and the ham is made otherwise so solid that there is no escape for this air.

In leaving small pockets containing air, which is heavily laden with germ life, there is a splen-

did field for the development of bacteria, as the chemical changes which take place, due to the oxidization of emulsified fats and friction of the hand while taking out the bone, give rise to an elevation of temperature, so that with the exfoliated epithelium from the workman's hands and other foreign matter carried by hands and tools, combined with the albumen in the meat, makes a splendid culture medium for the development of bacteria in the presence of a favorable temperature. While such a fine culture medium is made for the development of bacteria, which afterwards makes your meat unfit for use, it can easily be overcome.

Just as soon as a load of boned and tied hams are taken to be hung up for further chilling from the boning and tying rooms, or preferably half a load, the sooner they are handled the better. As each ham is taken off the truck to hang up it is first laid on a table, and with the regular pumping pickle pump the ham all over, especially that part from which the bone was taken, but only one stroke at each insertion of the needle,

then hang up the ham till it is considered chilled enough to pack. Treat all this stock in this way and there will be no "sour," as the antiseptic properties of the pickle will counteract the bad effects already mentioned and which would cause a sourness in the meat.

I wish the people who made a failure of making their boned and tied stock from green hams would try this plan and see how simple it works, yet works like a charm in getting the meat sweet. This pumping immediately after boning need not interfere with the pumping on the first overhauling.

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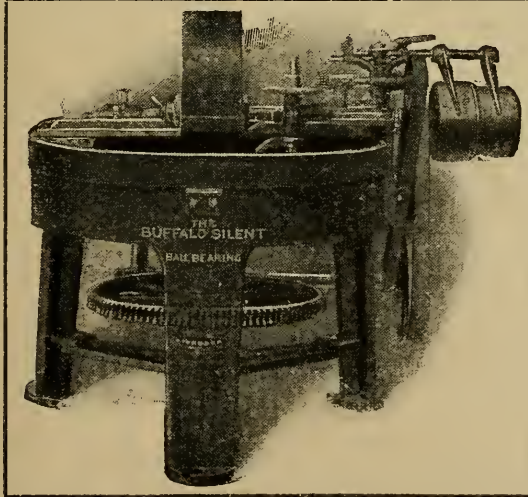

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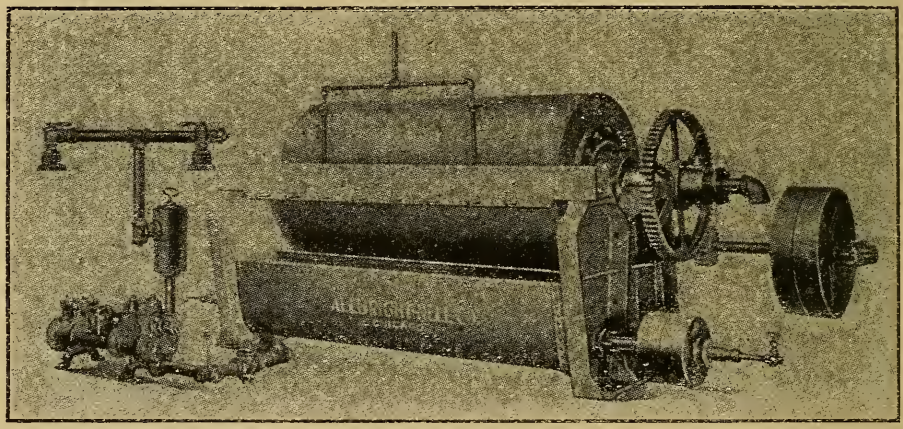

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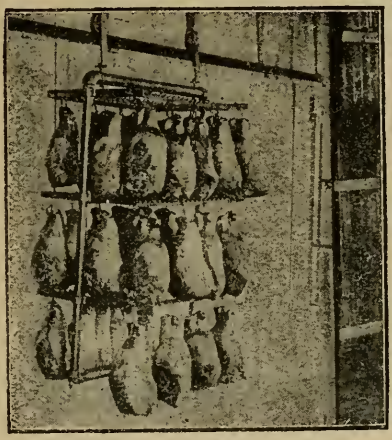

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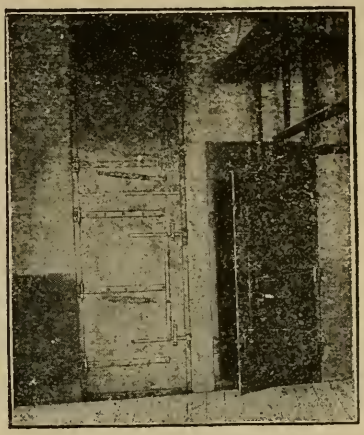
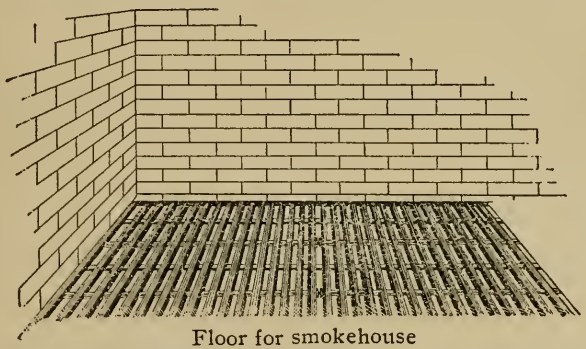


Smokehouse door



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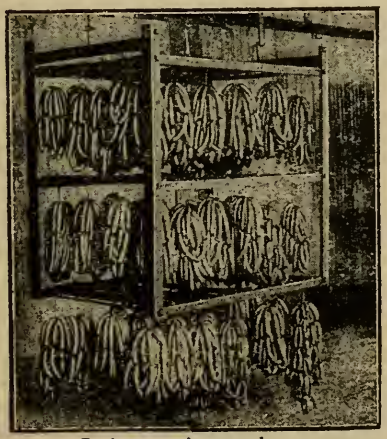

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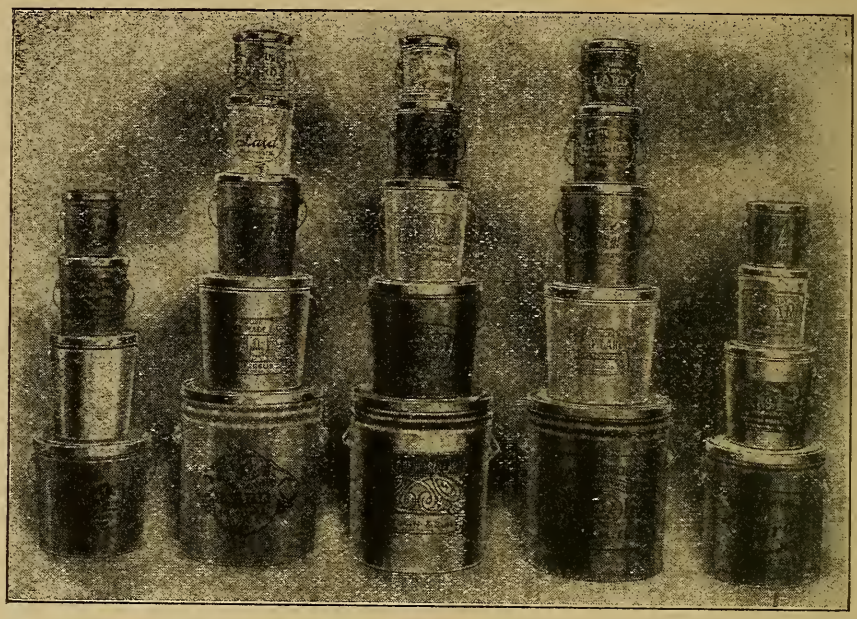

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